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Complying With Sarbanes-Oxley 5
Eolas' Web Embedding Patent Overturned 5
Telelogic's Tau/Developer Shifts Into C++, Java 6
Teamstudio for Java Edition 5 Keeps Threads Straight 6
Wily Embraces IBM Integration, Updates Introscope 8
N Software Plans To Take EDI to Java 8
Sybase Looks to Ease Use in EAServer 5.0 10
BroadVision Narrows View For Analysts 10
FileMaker Improves Relations 12
XStudio Tries to Make XML a Snap 12
Bowstreet Opens Two New 'Factories' 14
JSF Spec Puts a Friendlier Face on Java 17
Microsoft's BizTalk Server 2004 Focuses on Collaboration ..18
Iona's Artix Hits The Mainframe 20
Palm's New Cobalt Has BeOS at Its Base 23
I-Logix Automates Rhapsody Testing 23

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WINDOWS CE 5.0 SET FOR PUBLIC TESTING

BY EDWARD J. CORREIA

Microsoft Corp. this week was set to release a public beta of Windows CE 5.0 that it says now includes error reporting, clamped-down security and a version of its Platform Builder development tool that sports a simplified user interface and scores of ready-to-use board support packages.

Microsoft said it would begin taking orders for technical preview CDs at electronicaUSA with the Embedded Systems Conference this week in San Francisco; general release is expected this summer.

John Starkweather, senior product manager of Microsoft's Embedded Devices Group, said Platform Builder's new unified interface will appeal to developers at all skill levels. "In the past, if you were a novice developer, you might [start by] going into the drop-down menus and templates to develop something. Advanced developers would go right to the command line. Now there's one space to do that with

▸ continued on page 20

'Whidbey,' 'Yukon' Held Until 2005

IDE, SQL Server update delays could hurt adoption of .NET

BY JENNIFER DEJONG

Delaying delivery of two key products for developers, Microsoft Corp. said last month it will not release the next versions of its SQL Server database and Visual Studio development environment until the first half of 2005.

Code-named "Yukon" and "Whidbey," respectively, both were previously promised by Microsoft for a late 2004 delivery. "We are still on track to deliver SQL Server Yukon Beta 2 and Visual Studio Whidbey Beta 1 in the coming months," said Microsoft's Tom Rizzo, SQL director of product management.

Microsoft's Rizzo gave no specific reason for the products' delay.

Rizzo declined to specify reasons for the delay. He simply said that Microsoft has decided to add a third Yukon beta early next year to enable beta customers to test their enterprise applications against Yukon. Rizzo also noted that Whidbey and Yukon are tied at the hip. "Whidbey will leverage new features in Yukon," he said.

Microsoft has not updated SQL Serv-

▸ continued on page 18

The Next Job for the W3C

BY YVONNE L. LEE

The World Wide Web Consortium, or W3C, is one of the powerful levers that moves the Internet. Founded by Tim Berners-Lee in October 1994 at the Massachusetts Institute of Technology in collaboration with CERN, the organization has developed and extended key technology standards such as HTTP, HTML and XML.

However, in recent years other organizations such as OASIS, industry consortia such as the Java Community Process, and vendors such as BEA, IBM, Microsoft and Sun have often been the driving force behind emerging specifications around security, transactions and Web services.

SD Times recently spoke with Berners-Lee, who in December received a knighthood for his contributions to the World Wide Web, about the future role of the W3C in setting standards for the Internet, and his vision for the Web.

Voice browsing is among the initiatives at the W3C, says Berners-Lee.

SD Times: Now that the core of the Web has been established, what is the W3C's mission, beyond incremental upgrades to the existing standards?

Tim Berners-Lee: There's a huge amount. We've got HTML, URIs, HTTP, and we've done a lot of things since then with scalable graphics. But there are a few major areas we hadn't touched at all. Voice browsing, which wasn't possible. There was software to do voice recognition, but it was hopeless, and now, it's less hopeless. It's exciting, the ability to be able to talk to the computer and order a pizza and do all sorts of things.

Then, there's the whole idea of being able to make the Web a collaborative space. For example, you and I could be able to connect to a Web site, and you would be able to open it up as well, and we'd be able to edit it. It should be extremely easy for us to do everything that we do on the desktop at the moment in a collaborative fashion.

Getting that collaborative use of the Web, or that collaborative play space or collaborative workspace involves a lot more issues than we expected. We try a lot of things at the consortium.

As we're spread across the globe, and since nobody really likes flying in airplanes when they don't have to, we spend as much time as we can using the Web collaboratively. We've developed all sorts of gadgets and connections between things. We have robots listening in on chat channels, helping people manage teleconference bridges and things.

But at the same time, there could be easier ways of dealing with people and finding ways to do things. Creating newsgroups on-the-fly, how could I create a document and give you access to it? We should be able to work on projects together or

▸ continued on page 20

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Complying With Sarbanes-Oxley

As companies strive to put finances in order, developers are getting in on the act

BY JENNIFER DEJONG

The impact of the Sarbanes-Oxley accounting reform and investor protection act is beginning to trickle down to developers.

"Developers are getting more and more involved with financial teams," said Wayne Snell, director of marketing at business process management software company Fuego Inc., in Plano, Texas. "They are being asked to document, from a systems perspective, how key business transactions are carried out—and to build out systems in such a way that they can be audited," he said.

Such requests are part of a massive undertaking on the part of chief financial officers at publicly traded companies to comply with the U.S. Public Company Accounting Reform and Investor Protection Act of 2002. Named for Sen. Paul Sarbanes, D-Md., and Rep. Michael Oxley, R-Ohio, who co-authored the bill, Sarbanes-Oxley was enacted in the wake of recent high-profile accounting scandals to protect investors by ensuring the accuracy and reliability of corporate financial disclosures.

"Publicly traded companies have to certify on a quarterly and annual basis that their financial reports accurately represent the reality of the company," explained Robert Dietrich, chief financial officer at software configuration management company MKS Inc., in Waterloo, Ontario.

Sarbanes-Oxley does not directly regulate how applications are developed or how information systems are used. But because, among other things, it forces companies to document and control how business processes are carried out, its implications for developers, particularly in the long term, are considerable. "Business is inseparable from information systems," said Dietrich.

Not only are information systems an integral part of how companies do business, but many business processes, such as booking and fulfilling a customer's order, span multiple applications. "That might include an in-house billing application, PeopleSoft financials and SAP inventory," said Fuego's Snell. "In the past, accounting software took care of [auditing requirements], but that doesn't address the cross-application issue."

ARE CONTROLS IN PLACE?

Developers currently involved in compliance initiatives are being asked by CFOs to document how those applications interact to execute business transactions and what safeguards are built into the process, noted Snell.

Doing so is central to complying with section 404 of Sarbanes-Oxley, which requires companies to include in annual reports filed after Nov. 15, 2004, "an internal control" report. The deadline was recently extended from June 15.

The scope of what "internal control" covers is enormous, can vary across industries, and is subject to interpretation. But the essential purpose of section 404 is to ensure that the controls a company has in place around business processes are

▸ continued on page 16

A SLOW MARCH TO COMPLIANCE

With deadlines for compliance to sections of the Sarbanes-Oxley act fast approaching, development teams remain mostly unprepared, with almost 60 percent reporting they either have not started doing any work at all or are just beginning to look into what compliance will involve. Less than 10 percent report they are either fully compliant or almost compliant.

Eolas' Web Site Embedding Patent Overturned

BY YVONNE L. LEE

In an extremely rare move, the U.S. Patent and Trademark Office (USPTO) gave the ax to a patent owned by the University of California and Eolas Technologies Inc., possibly paving the way for Microsoft Corp. to win an appeal of a patent infringement case involving the technology.

The patent, No. 5,838,906, involves how to embed objects such as audio and video players on a "hypermedia document," such as a Web page, which users can interact with when visiting a site.

In February 2003, a court ruled that Microsoft had violated this patent, and ordered the Redmond company to pay US$521 million in damages, as well as to remedy the situation by making changes in its browser, Internet Explorer. Microsoft has appealed the ruling.

However, Web developers, including Tim Berners-Lee, chair of the World Wide Web Consortium, petitioned the USPTO that this ability existed before Eolas' president Michael Doyle's November 1994 filing for a patent. Lee submitted evidence known as "prior art" that the capability existed before the patent was filed.

Because of the outcry, the USPTO agreed in December 2003 to review the patent.

Since 1981, when the re-examination process went into effect, only 6,800 requests for re-examination have been made, while nearly 2 million patents have been granted in that time, according to Brigid Quinn, deputy director of public affairs for the USPTO. Of those 6,800 requests, only 2 percent—or 136—come from a director's order in response to an industry concern such as this, she said.

In response to the review, the judge from the infringement case ruled that while Microsoft was still liable for damages to Eolas, which says it was founded as a "spinoff" of the university, Microsoft did not have to continue planned changes to Internet Explorer to comply with the original order.

"The [US]PTO rarely exercises this [review] power, and when it does, it is usually not good news for the patent holder because a high percentage of such reexaminations end in cancellation or amendment," Judge James Zagel wrote in his ruling.

Microsoft expects that its appeal will succeed as a result of the overturned patent.

"From Microsoft's standpoint, if the patent is ruled to be invalid, it stands to reason that it would have to be overturned," said company spokesman Lou Gellos. "How can you be held accountable [for it]?"

Eolas has 60 days to appeal the ruling by the patent office. ▮

MORE JOLTS FOR SOFTWARE INDUSTRY

SANTA CLARA — The 14th annual Jolt awards, produced by CMP Media LLC's Software Development Magazine and presented here at the Software Development Conference and Expo on March 17, added new categories for change and configuration management tools, security tools and mobile development tools. Also, last year's Web Services Tools category was renamed as Web Development Tools.

Books – General Interest
"Waltzing with Bears: Managing Risk on Software Projects" by Tom DeMarco and Timothy Lister

Books – Technical
"Test-Driven Development: A Practical Guide" by David Astels

Business Integration and Data Tools
JRules 4.5 (ILOG)

Change and Configuration Management Tools
AccuRev 3.3.1 (AccuRev)

Design and Analysis Tools
MindManager X5 Pro (Mindjet)

Languages and Development Environments
The Eclipse IDE and Application Framework 2.1 (Eclipse – open source)

Libraries, Frameworks and Components
Hibernate 2.1 (Hibernate – open source)

Mobile Development Tools
Sun J2ME Wireless Toolkit 2.0 (Sun)

Project Management Tools
V1: XP 1.0 (VersionOne)

Security Tools
Network Probe 1.0 (ObjectPlanet)

Testing Tools
TestComplete 3.0 (AutomatedQA)

Utilities
PopChart, OptiMap and Builder 5.0 (Corda)

Web Development Tools
MX 2004 (Macromedia)

Web Sites and Developer Networks
developerWorks (IBM)

News Briefs

COMPANIES

Dell Computer Corp. and **Oracle Corp.** have each separated the roles of chairman and CEO. At Dell, president Kevin Rollins assumes the CEO title, while founder Michael Dell remains chairman. At Oracle, CFO Jeff Henley becomes chairman of the board, while Larry Ellison continues as CEO . . . **Intel Corp.** has formally named its AMD64-compatible extensions to the 32-bit Xeon processor's instruction set. Those extensions will be known as Extended Memory 64 Technology, or EM64T.

PRODUCTS

OpenStorm Software Inc. has released **Service Orchestrator**, a process flow management server with a graphical modeling environment for modeling processes via Web services. There are two versions of the software, specifically for Java or .NET. Service Orchestrator complies with the OASIS BPEL4WS 1.1 specification . . . Perforce Software Inc. has created a plug-in for Eclipse that allows its **Perforce SCM** software configuration management system to be accessed from within any Eclipse or WebSphere Studio Application Developer tools. The plug-in, called **P4WSAD**, works with any IDE based on Eclipse 2.0.2 or later. The company also has released **P4EXP**, a plug-in that allows the Perforce SCM software to be accessed directly from Windows Explorer . . . MKS Inc. has updated its **Integrity Manager**, a process and workflow server, to be able to integrate with Computer Associates' AllFusion Endevor Change Manager, a change and configuration management system for IBM's zSeries mainframes . . . Popkin Software & Systems Inc. is updating its **System Architect** modeling software. Version 9.2 adds a new diagramming tool that allows automatic discovery of relationships and generates a visual report; a Web-based information publisher; and rules-based access control to the architectural model. The software update should be available in April . . . Agitar Software Inc. has released **Agitator 1.0 for Java**, a new tool that automates the creation and execution of unit tests. The software includes a management dashboard that displays test status . . . Version 7.2 of **FioranoMQ**, a JMS server from Fiorano Software Inc., adds new APIs to support large messages. This update has new runtime client libraries in C++ and C# and has new high-availability features that let JMS clients switch over to a secondary message-queue server if the primary fails or becomes inaccessible. A development license costs US$2,500 per server processor; deployment starts at $7,500 per server processor . . . ILOG Inc. has launched **Gantt for .NET**, a set of charting components written in C# that can be used with any .NET-compliant language . . . Atlassian Software Systems Pty Ltd. has updated **JIRA**, its J2EE-based issue-tracking and project management system. Version 2.6 can connect directly to a CVS-based source repository, and also has a new XML/SOAP-based interface. It also can import data from the Mantis and Bugzilla issue trackers . . . AltaWorks Corp. has released a version of **Panorama**, its performance management software, that runs on Red Hat Linux. Previously, the software ran on Unix and Windows only. Panorama's pricing begins at US$34,000 per installation . . . **OpenInsight 7.0**, the database application development tool from Revelation Software Inc., has new form and table build tools as well as an improved application manager. The company also now offers GUI front ends for two multivalue databases IBM gained with its acquisition of Informix in 2002 . . . 4D Inc. has updated **4D for OCI**, a plug-in for its 4D database that allows applications to communicate with Oracle servers using the Oracle Call Interface. 4D for OCI 2003.3, which costs US$199, adds a Mac OS X version of the plug-in, and enhances the Windows version with higher performance and support for Oracle 10g . . . ej-technologies GmbH has updated its Java profiler. **JProfiler 3.0** includes a redesigned heap walker with reference graphs, method graphs for CPU profiling, an allocation hot spot monitor and a deadlock detection graph. The software costs US$499 or €410 per seat . . . Service Pack 1 for Microsoft Corp.'s **InfoPath 2003** XML forms client, now available as a public preview, adds a

▸ continued on page 10

Telelogic Tau/Developer Shifts Into C++, Java

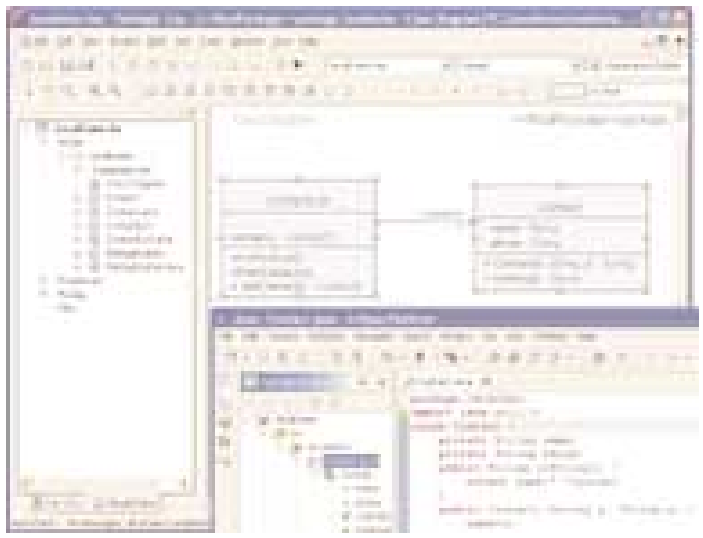
Modeling tool broadens UML, platform support

BY DAVID RUBINSTEIN

Telelogic Inc. will introduce C++ and Java code generation in the next versions of its Tau/Developer UML modeling and component testing tool, due out April 30, the company has announced.

Telelogic also announced that the update will feature broader support for UML 2.0 and tighter integration with the company's DOORS/Analyst requirements management tool and the Tau/Architect design tool for systems engineers.

Tau/Developer 2.3 provides a round-trip environment that allows users to work either in C++ or Java, or in UML, according to Andy Gurd, senior project manager, as well as in C, which was supported in earlier versions that many customers used to create real-time and embedded applications. The C++ version will be integrated with Visual Studio .NET version 7, so users can work either in Tau or Microsoft's IDE and then synchronize the work between the code and the model, and gain debugging capabilities as well, Gurd said. "Users can drill into the model down to the code if the debugger finds a problem," Gurd explained. Also, developers can bring existing C++ code into Tau to visualize what they have in a model form, he added.



Tau/Developer integrates with development environments such as Microsoft's Visual Studio, Sun's Java Studio and Eclipse.

Intended for general-purpose applications, the Java version integrates with Sun's Java Studio and Eclipse, Gurd said. "We haven't seen big enterprises developing Java real-time pieces yet," he said. "Now there's an evolving Java real-time specification, and we'll keep an eye on that, but our customers haven't indicated it's something they're doing now." The Java version also allows users to work either in Java or UML, and enables the same kind of code visualization as the C++ tool, Gurd noted.

The tighter integration with the other Telelogic tools gives organizations requirements traceability throughout the tool set, enabling users to see how a change in a requirement ripples through the system, or how changing a component in the deployed application affects the dependencies and connections of the existing system.

Telelogic supports 10 of the 13 diagrams described in UML 2.0; the new support is for Component, Deployment, Interaction Overview and Package diagrams. "Communication is smoother with UML 2," said Gurd. "Different disciplines talk better to each other, so they can shift to a pre-emptive rather than a fire-brigade approach" to ensuring software meets requirements.

The new versions of Tau/Developer sell for US$6,095 per node-locked license. ▮

Teamstudio for Java Edition 5 Keeps Threads Straight

BY YVONNE L. LEE

Teamstudio Inc. in March added a tool to Teamstudio for Java that the company claims identifies thread deadlocks as they happen.

Teamstudio for Java Edition 5 includes four tools, which are available either as a suite or separately. They include the new Thread Profiler 1.0, Memory Profiler 2.0, Analyzer 2.11 and Performance Profiler 1.01.

Thread Profiler 1.0 tries to identify situations in which more than one part of an application requires the same resources. When these portions of an application, or threads, attempt to access resources simultaneously, it can slow or freeze an application, according to a company spokesperson.

The Thread Profiler also reports how much time a program has spent threading. The new tool also includes graphs that can show all activity grouped according to thread or monitor.

In addition, Teamstudio has added new graphs and metrics to the Memory Profiler, including heap analysis graphs and per-method allocation metrics, which are summary tables showing the number and size of allocated objects broken down by type and by allocating method.

Three tools, Memory Profiler 2.0, Analyzer for Java 2.11 and Performance Profiler 1.01, will now work with Borland's JBuilder X development environment.

Teamstudio for Java costs US$1,495 per user. The products also are available separately. Analyzer for Java costs $295 per user. Memory Profiler, Performance Profiler and Thread Profiler each cost $495 per user. ▮

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Wily Embraces IBM Integration, Updates Introscope

BY DAVID RUBINSTEIN

Java application management software provider Wily Technologies Inc. this week is introducing a series of adapters for IBM's WebSphere Business Integration and releasing version 5 of its flagship Introscope app management product.

The company also announced it is beginning "a more formal relationship" with JBoss Inc., with CTO and founder Lewis Cirne saying it will support the management of applications deployed on the open-source JBoss application server.

IBM WebSphere Business Integration, according to Wily senior vice president of product and strategy Vic Nyman, is basically a repackaging of the technology IBM gained as part of its acquisition of CrossWorlds in January 2002, and that the company recently added in the modeling and simulation capabilities it acquired with Holosofix last year. "IBM is connecting PeopleSoft or SAP systems with CICS and using WebSphere as a critical piece for that integration," Nyman said. "We help them by monitoring the transactions" with the new Introscope PowerPack for WebSphere Business Integration. There are seven adapters, for PeopleSoft, SAP and IBM mainframe and messaging, that make up the PowerPack, he said.

Introscope 5 has been updated with new reporting systems that allow data to be shared between departments, Cirne said.

Also, the tool has been given a multiuser, multigroup user interface that gives an operations worker the ability to manage multiple development groups and get the high-level views to create trouble tickets, while allowing for a more technical drill-down by the developer tasked with fixing the problem, he explained. ▮

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N SOFTWARE PLANS TO TAKE EDI TO JAVA

BY YVONNE L. LEE

N Software Inc. late last month released a set of Java components for building Electronic Data Interchange (EDI) applications that adhere to the latest standards for transmitting data over the Internet.

The set of components, called IPWorks EDI 2.0, complies with Applicability Statement 2 (AS2), an Internet Engineering Task Force standard for securely exchanging business documents over the Internet, and specifically for making sure that those documents arrive at their intended destination. The software, which consists of networking components, is being reviewed by the Uniform Commercial Codes Council, and was on schedule for late March certification, according to N Software president Gent Hito.

The components provide what is necessary for encryption, SSL connections and for digital signatures. In addition, the transport is much cheaper over the Internet than it had been over private value-added networks, said Hito.

The US$1,000-per-processor software is available for both J2EE and .NET platforms; previously it had been available for .NET only. ▮

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News Briefs

MORE PRODUCTS

◂ continued from page 6

new InfoPath toolkit for Visual Studio .NET, support for ActiveX controls, built-in support for calculation, and tighter integration with BizTalk Server 2004. It also allows forms to be deployed via e-mail. The final service pack will be shipped later this year as part of Office 2003 SP1 . . . IBM Corp. is continuing with its new vertical industry initiatives by releasing new **WebSphere** middleware offerings targeting health care, life sciences, retail and communications customers . . . XyVision Enterprise Solutions Inc., also known as XyEnterprise, has released a version of its **XML Professional Publishing** content management system that can run on HP-UX 11i. Previously, XPP ran on AIX, Solaris and Windows . . . WRQ Inc. has released an adapter for its **Verastream** host integration server that can communicate with Microsoft's BizTalk Server 2004 . . . **Understand for Java** is a new utility from Scientific Toolworks Inc. that parses source code to reverse-engineer, automatically document, calculate code metrics, and help developers understand, navigate and maintain large source code trees. Licenses cost US$495 per seat . . . **AgilePoint BPMS**, a .NET-based business process management system from Ascentn Corp., now supports Microsoft's BizTalk Server 2004 . . . Express Logic Inc. has added Xilinx PowerPC processor core support to its **ThreadX** real-time operating system . . . MetaCase Consulting has extended its **MetaEdit+** computer-aided software engineering environment with a set of Web services-accessible APIs. The MetaEdit+ APIs can be used for building real-time connectivity with external applications. The license cost for the API is €1,000 per seat; MetaEdit+ itself is €5,500 . . . Corda Technology Inc. has released **Highwire**, an embeddable HTML-to-PDF generator application designed for use on Web servers . . . TimeSys Corp. has updated its **TimeStorm Linux Development Kit** for the PowerPC processor to include the Linux 2.6 kernel. The LDK costs US$995 per developer seat, and is royalty-free . . . Candle Corp. has added to its PathWAI product family of performance tools for IBM's WebSphere software. **PathWAI Monitor for WebSphere Application Server V120/PathWAI SQL Expert** identifies and fixes SQL performance problems. **PathWAI XE for WebSphere Integration Brokers V120** is a performance tuning and analytical tool that accelerates broker and message flow performance. **PathWAI Dashboard for WebSphere Business Integration** offers a single integrated view of an entire IBM message broker and WebSphere MQ environment . . . Veritas Software Corp. has launched **Indepth for J2EE**, an adaptive instrumentation set for J2EE-based application servers. The instrumentation data is collected by Veritas' **Inform** server, which generates historical reports and exception alerts.

PEOPLE

PETERSON

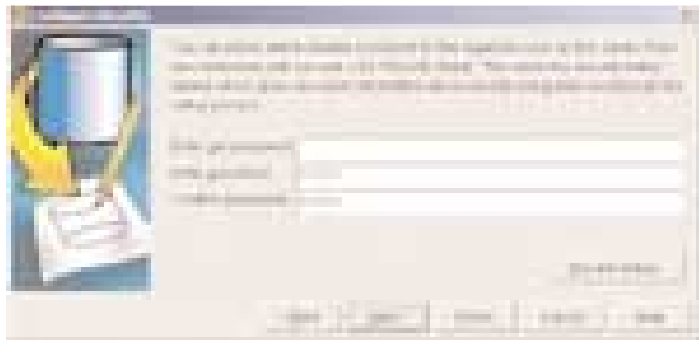
Sun Microsystems Inc. has appointed **Marissa Peterson** as EVP for Sun Services; she will continue as chief customer advocate and EVP of worldwide operations. She takes this new role from **Patricia Sueltz**, who left Sun to become president of technology, marketing and systems at Salesforce.com Inc. . . . **Yuval Scarlat** has been named general manager and VP of products for Mercury Interactive Corp.; previously, he was VP of the company's application-delivery business unit. **Boaz Chalamish** has been promoted to general manager and VP of R&D; previously, he was VP of application development R&D . . . Visible Systems Corp. has hired two vice presidents for business development: **Jeff Smith** for its model-driven architecture tools, and **Stan Mazuroski** for its other products . . . Grand Central Communications Inc. has hired **Stephen Reade** as EVP of worldwide field operations; previously, he was a consultant to the company. Another consultant, **Susan Dwyer**, has joined Grand Central as VP of worldwide marketing . . . The Eclipse Foundation has announced four new members of its board of directors: **John Wiegand** of IBM Corp., **Rich Main** of business intelligence firm SAS in Cary, N.C., **Todd Williams** from Genuitec LLC in Plano, Texas, and **Bjorn Freeman-Benson** from the University of Washington in Seattle. ▮

Sybase Looks to Ease Use in EAServer 5.0

Plans to stop selling enterprise edition of app server

BY EDWARD J. CORREIA

An app server so easy to install, even a developer could do it. That's the claim of Sybase Inc., which in late March was scheduled to begin shipping EAServer 5.0 for Linux and HP-UX. The company in February released editions of its new server for Solaris and Windows.



A security screen helps administrators set up controls in a simple way.

Sybase also will discontinue the enterprise edition of EAServer. "We found that some of the features were either not used by a large percentage of customers or were becoming required features," said Loren Corbridge, a Sybase senior product manager, adding that Simple Network Management Protocol (SNMP), for example, has become so standardized that customers were unwilling to pay more for it.

Corbridge said that simplifying the setup and administration of EAServer through a series of wizards was done mainly for first-time users. "Our focus was on giving brand-new users, developers and administrators the tools to easily get the server set up out of the box and quickly start their development," she said, adding that for developers, the server can act as a debugging aid. "Developers building applications against our server need to make sure their code will run correctly."

Also significant for developers is the new Web services plug-in for Eclipse, which Corbridge said brings functionality to expose existing components as Web services previously available only through its proprietary development environment. "Eclipse is an open standard and [runs in] a number of environments. This makes it a one-stop shop for anything around Web services." The plug-in also can import WSDL files to permit further development and deployment. "The deployment tool creates a JSP test page as a client and posts things to UDDI" for discovery by other applications and services. The tools also support Sun's Java API for XML (JAX).

EAServer 5.0, which will be sold for the same price regardless of platform, is available now for Solaris and Windows servers for US$7,500 per server processor; AIX, HP-UX and Linux editions were due for release by the end of March. ▮

BroadVision Narrows View for Analysts

BY EDWARD J. CORREIA

With its high-end business-to-business Web development tools, BroadVision Inc. was one of a few Wall Street darlings to survive the late 1990's tech wreck. Now 10 years old, the company is setting its sights on business analysts with the release this week of Process, the fourth component in its e-commerce suite that it says gives business analysts a point-and-click environment for modeling Web applications from process flows.

According to Ruud Van Hilten, BroadVision's director of global business consulting, many companies with e-commerce sites have accomplished only the order and fulfillment portions, but are finding that the next hurdles their Web sites need to clear in order for visitors to become totally self sufficient, such as processing merchandise returns, are more costly and complex. "They typically have to hard-code all these processes, which takes too much time and the IT cost is prohibitive."

Van Hilten said Process permits business analysts to easily model those processes and then hand them off to a developer for coding. "By the time they are both done, the result is a ready-to-use, self-service Web application," that runs on J2EE application servers, including those from BEA, IBM and JBoss, he said.

Richard Hughes, BroadVision's director of product strategy, said that existing modeling standards such as the Business Process Modeling Language (BPML) were considered too low-level for the issues facing business analysts. "Most modeling languages cope with states [and] transitions. We wanted to deal with higher-level concepts and processes [under which] users fill in a form, go into collaboration with a call center agent and get a notification. The amount of code to write there quickly gets out of control. We've tried to stay close to the concepts [of BPML], and we built a richer language," he said.

Scheduled to be available March 31, Process is offered in three editions: the US$2,000 per-seat Process Designer Edition is an Eclipse-based tool business analysts use to create raw models. A $20,000 Developer Edition permits developers to add presentation and program logic to models and to test-deploy them using an included JBoss server and Hypersonic-based database. For deployment, a distributable runtime costs $60,000 per server processor, and includes a thin-client management tool. Process runs stand-alone or as part of BroadVision's flagship Integrated Self-Service Suite, which includes Commerce, Portal and Content management modules.

A fully functional, 30-day evaluation version is available for download at www.broadvision.com/powerofprocess. ▮

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Improvement in Relations

FileMaker now stores all tables in a single file

BY YVONNE L. LEE

FileMaker Inc. has revamped the architecture of its workgroup database, giving it a more relational structure.

FileMaker 7 has been revised so that multiple tables can be stored in a single file, according to Ryan Rosenberg, vice president of marketing and services. Although FileMaker has had relational capabilities for years, prior versions set up relationships between files, Rosenberg said. "It has a completely new soul," he said. "It moves FileMaker into the realm of a true relational architecture where everything's in one database."

The Santa Clara company, an Apple Computer Inc. subsidiary, has beefed up the database so that a file can contain up to 8 terabytes, a single data container for pictures or multimedia can contain 4GB, and a text field can store 2GB.

New in FileMaker 7 is a Relationships Graph from which to create and modify relationships by clicking and dragging. Also new is the ability for a single user to open multiple windows in the same database to simultaneously access different views of the information.

FileMaker Pro 7 is available now for US$299 per user. FileMaker Developer 7 is also available now at $499 per developer.

FileMaker Developer 7 has all the features of FileMaker Pro 7 along with integrated developer tools and utilities to help build databases faster. FileMaker Pro 7 runs only on Windows and Mac OS X; older versions of the Mac operating system will stop being supported in a few months, the company has indicated.

The $999 FileMaker Server 7 and $2,499 FileMaker Server 7 Advanced are due later this year. Server 7 supports 250 concurrent users, and the new Server 7 Advanced will support both 250 concurrent network users and 100 concurrent Web users. ▮

FileMaker graphically shows relationships between tables for accessing of fields.

XSTUDIO TRIES TO MAKE XML A SNAP

BY YVONNE L. LEE

Snapbridge Software Inc. in March released software for creating XML services and the stylesheets that govern their appearances.

XStudio 2.5 uses three panes, according to chairman and chief technical officer Benjamin Chen: an input pane that shows a representation of XML, a sample HTML page for laying out the design, and a results pane to show the final appearance. By clicking between the panes, it is possible to point to live XML data regardless of schemas, change output requirements in real time, map XML to HTML, and work with databases, flat files and Web services, said Chen.

Developers create the fluid XML data and the Extensible Stylesheet Language (XSL) description by moving icons between the input and HTML windows, he said.

In this way, it's possible to build XML pages without knowing XML schema or hand-coding, he said.

"What it really does is open up the world of XSL to a whole new class of programmers," he said.

Version 2.5 can automatically create XSL transformations to direct the appearance of pages without requiring developers to know XSL syntax, said Chen.

XStudio 2.5 is available now and costs US$199 per developer seat. ▮

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*– **Adam Kolawa**, Ph.D.*
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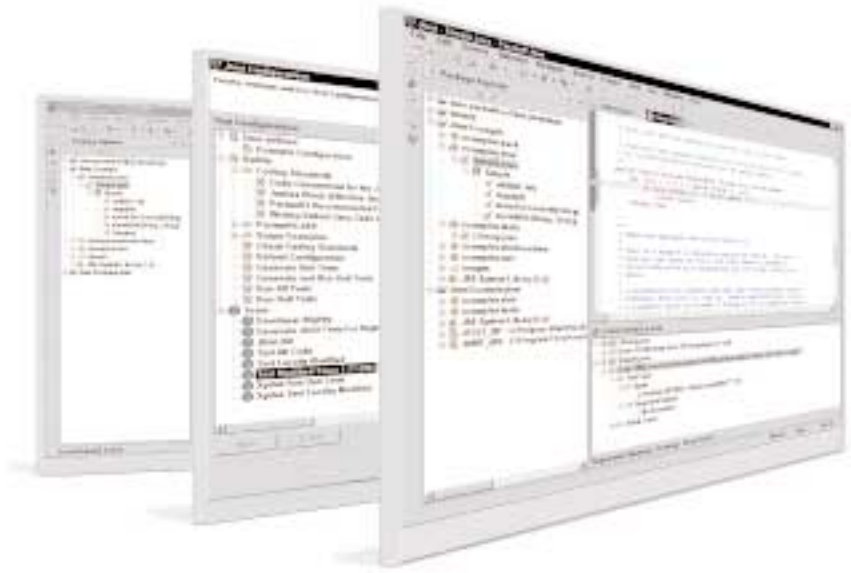

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Bowstreet Opens Two New 'Factories'

RAD automation tools now include Web services, frameworks

BY EDWARD J. CORREIA

Bowstreet Inc., which made its bones with its "Factory" line of RAD tools for building reusable Java applications, this week is set to release Framework Factory, which the company claims allows developers to automate the generation of customized applications, eliminating the need to manually recode major parts of the application to be reused.

The news comes on the heels of a mid-March release of Syndication Factory, which Bowstreet executives said lets developers create aggregate Web-based applications by encapsulating Web services from third-party sites without participation from those parties and without losing visitors to their own site.

To illustrate the benefits of Framework Factory, Joe Lichtenberg, Bowstreet's vice president of marketing, described Sanchez Computers, a company that develops software for financial institutions. He said that as Sanchez's customer base grew, its margins started to drop. "The reason was that they had brought in so many customers, each requiring a unique version of the application, that they spent a disproportionate amount of their resources maintaining the one-offs they built."

The systems that Sanchez maintained, Lichtenberg continued, consist of legacy back-end systems where all customers and transactional data are stored, and a Java-based middle tier that provides presentation and application logic to interact with the back ends. "They found that the changes they were making [to the middle tier] were the same from customer to customer."

Lichtenberg said Sanchez developers used Framework Factory to make their own "builders," Bowstreet's term for components that automate the creation of customized code that would otherwise have to be developed by hand. "They found design patterns that were easily encapsulated and built their own builders to integrate to a back-end system or add a piece of presentation that puts a button on a page," he said, for example. Lichtenberg claimed that in one case, development that once took two man-months was cut to two man-weeks.

Framework Factory and Syndication Factory each cost US$5,000 per developer seat plus $20,000 per server processor. Framework Factory includes 100 predeveloped builders. General availability is set for April 1.

BREAKING AWAY FROM IBM

The company in mid-March also released a JSR 168-compliant version of Portlet Factory 5.8 for WebSphere, which for the first time can target portals other than IBM's WebSphere Portal. The company for the first time also now offers a platform-independent version.

Available now for Linux and Windows, the Eclipse-based Portlet Factory 5.8 costs $6,000 per developer seat for the platform-independent version, and $9,000 per seat for the WebSphere version. ▮

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SARBANES-OXLEY

◂ continued from page 5

tight enough to prevent fraud.

"You have to prove you have checks and balances in place around business processes and that those checks and balances are working," said Dushyant Pandya, director of strategic technology at business integration firm TIBCO Software Inc., in Palo Alto, Calif.

A key piece of that is proving a concept known as "segregation of duties," said MKS' Dietrich. "For instance, the employee who issues a purchase order cannot also write checks. These functions must be separate," he said.

In the same vein, human-resource managers who hire employees should not also have payroll authority. "If they did, they could hire [and issue checks to] fictitious employees," said Dietrich.

Section 404 addresses a host of other issues, such as how companies recognize revenue on financial statements, and how they document sales or other business agreements. "Businesses do a lot of deals that are verbal, with no contracts, but that's dangerous in the world of Sarbanes-Oxley," said Snell.

Also central to 404 is retention of documents, including electronic ones, pertaining to sales and other business transactions. "But it's still unclear how long you need to retain them," said Stephan Chan, vice president of business development at e-mail management software company ZipLip Inc., in Mountain View, Calif. "It depends on the industry and the documents," he said.

That lack of clarity is a key reason why developers and others involved in compliance initiatives are struggling to figure out exactly what Sarbanes-Oxley entails. "It's ambiguous, a living breathing organism," said Snell. "But no one is saying, 'Build new systems,'" he said. "They are saying, 'Get your house in order with what you've got.'"

Section 404 requires companies only to document controls they have in place today and have them certified by their auditors. "Right now, companies are working with their audit partners to define the processes they need to have under control and to address deficiencies," said TIBCO's Pandya. "The guidelines are so loose."

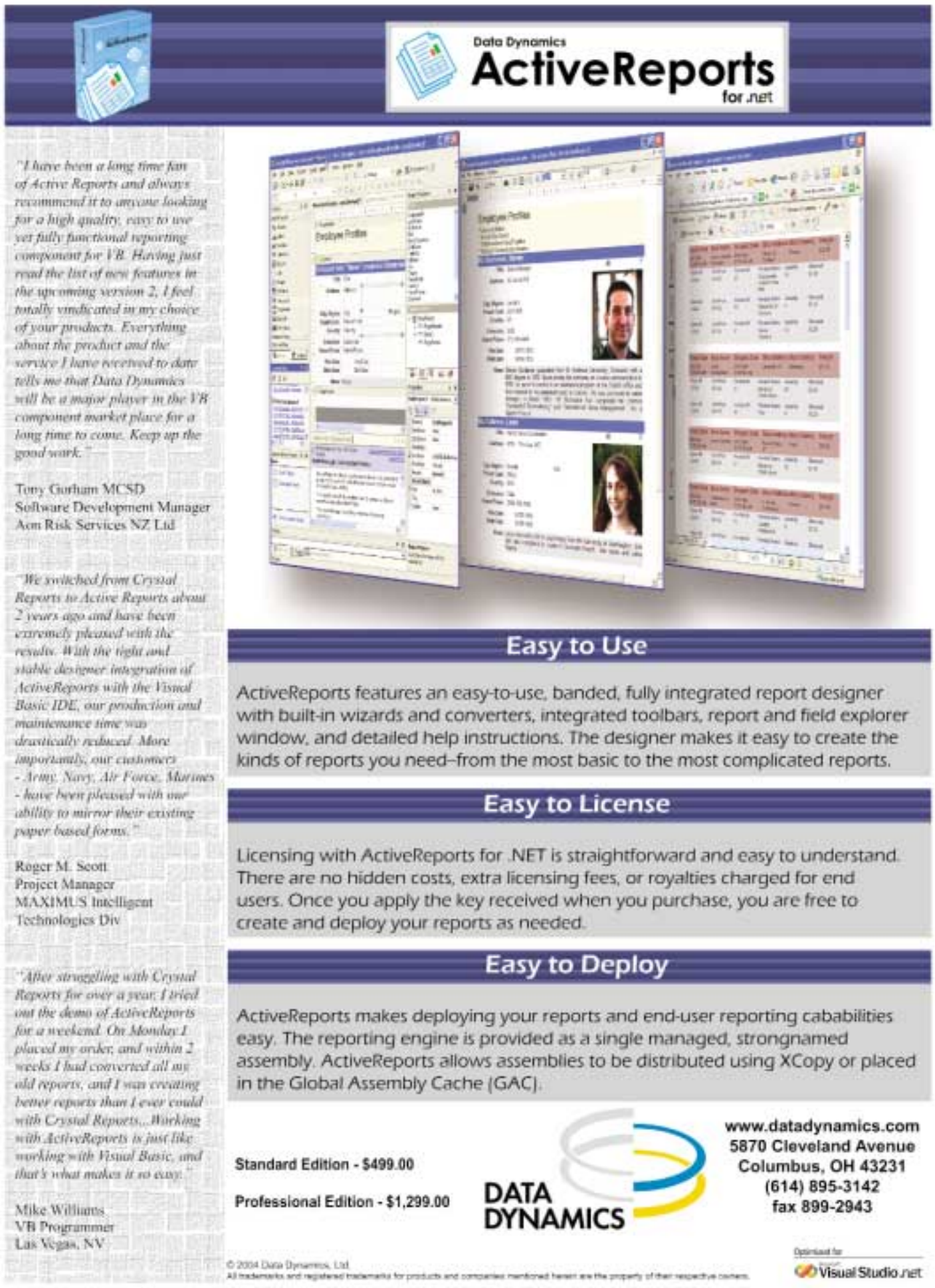
Y2K ALL OVER AGAIN?

The Sarbanes-Oxley act includes more than 50 sections, each with its own compliance date. While some, such as section 302 that mandates CEOs and CFOs certify annual and quarterly reports, have already taken effect, many are still a long way out.

One that's likely to impact developers in the future is section 409. Known as "real-time disclosure," it will require a company to rapidly disclose information pertaining to unanticipated changes in its financial condition, such as the loss of a major client.

A deadline for 409 compliance is not yet set. Nor is it clear exactly how it will impact developers. "But it will force companies to get more efficient about their business processes," said Snell. It's likely that developers will have to document not only that systems are carrying out a business process the right way, but that they do it the same way every time, he said.

Given the amount of work that lies ahead, Sarbanes-Oxley looks like Y2K all over again, said Marc Masnik, senior IT manage at TIBCO. "But this time, your CEO and CFO could go to jail," he said. ▮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JCP Puts a Friendlier Face on Java

JSF spec aims to make interface design as easy as it is on .NET

BY YVONNE L. LEE

Sun's Java Community Process in early March released JavaServer Faces (JSF), a specification for building the graphical element to Java applications.

The specification, JSR 127, is a graphical interface framework to create application interfaces and manage the connection between the user interface and the underlying application. The specification defines a set of Java base classes for graphical interface components, component states and input events. It also specifies a set of common graphical interface components, including HTML components.

JavaServer Faces technology includes a set of APIs for representing user interface components and managing their state, handling events and input validation, defining page navigation, and supporting internationalization and accessibility, as well as a JavaServer Pages (JSP) custom tag library for expressing a JavaServer Faces interface within a JSP page.

Although several companies make graphical interface design systems for J2EE, those systems work with specific vendors' application servers, said Kito Mann, author of the JSF Central Web site and principal analyst at Virtua Inc. of Stamford, Conn.

"There are dozens and dozens of solutions on the market," said Mann. Having a single specification should open the third-party component market, making it even easier to build user interfaces, he said.

The JSF spec is designed to make it easier to build not only user interfaces, but also the tools that build them, said Dennis MacNeil, senior product manager for Java Web services at Sun. Sun has made a free binary reference implementation available from java.sun.com.

IBM and Oracle will introduce new tools based on JavaServer Faces at JavaOne in San Francisco in June, he said. "These tools are easier to use, which makes applications easier to build," he said.

Some of the motivation for improving the interface and tools comes from pressure to compete against Microsoft's .NET platform, said Clay Ryder, vice president and chief operating officer of analyst firm The Sageza Group Inc. of Union City, Calif.

Sun's MacNeil denied that the specification came as a result of feeling pressure from .NET. "I don't know if it's a response [to .NET]," he said. "It is the first step in making [J2EE] accessible to a larger audience of developers."

"It's logical in the perspective of getting Java more woven into the environment," said Ryder. "At the end of the day, users and corporations really want to integrate all this stuff." ■

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Microsoft's BizTalk Server 2004 Focuses on Collaboration

Messaging, orchestration engine based on Business Process Execution Language

BY JENNIFER DEJONG

Microsoft Corp. last month launched BizTalk Server 2004, the third major version of its business integration offering.

BizTalk 2002 and 2000 focused primarily on application integration tasks, such as synchronizing multiple versions of business data stored in CRM and ERP systems. But 2004 extends beyond company walls, allowing developers and business users to jointly define, manage and monitor business processes that depend on data from multiple applications, including those of suppliers and other partners.

"Enterprises face significant challenges in managing and automating increasingly disconnected business processes," said Microsoft's Ted Kummert, corporate vice president of the e-business servers group.

New for developers is the ability to work with BizTalk from within Visual Studio .NET, but the integration server is geared heavily to business users.

At the heart of BizTalk 2004 is a messaging and orchestration engine, based on the Business Process Execution Language (BPEL), which allows the two parties to collaboratively map out the steps involved in a business process, such as fulfilling a customer order or processing a loan application.

"In the past, the business analyst simply handed off a document to the developer," said Kummert. Because BizTalk is integrated with both VS.NET and Microsoft's diagramming and data visualization tool, Visio, "each party can work within the environment they are accustomed to," he said.

Written by developers at BEA Inc., IBM Corp. and Microsoft, BPEL describes a business process so it can be carried out across the Web in a consistent way.

Also new to BizTalk 2004 is the ability to monitor business processes as they occur. "Is my shipping process, which gets product to customers, taking two days or three?" said Kummert. "If it's taking too long, there are a set of actions I can take to drive change."

A business rules engine enables business analysts to easily change the rules and policies that govern business processes, he said.

BizTalk Server 2004 Enterprise Edition, which allows integration with an unlimited number of internal applications and external trading partners, costs US$24,999 per microprocessor. Standard Edition supports 10 internal applications and 20 trading partners and costs $7,000 per server. Partner Edition, which allows integration with three internal applications and three trading partners, costs $999 per server. ■

WHIDBEY DELAY

◂ continued from page 1

er since 2000. By contrast, IBM has released three versions of its DB2 Database on Linux-Unix-Windows since June 2000 and expects to deliver version 8.2 in August of this year, an IBM spokesperson said. Last month Oracle released Database 10g, the fourth version since Oracle8i Release 3 in September 2000, an Oracle spokesperson said. Rizzo, though, claimed that those companies release updates to their enterprise databases without developer tools to work with them.

Gartner Inc. vice president and research director Mark Driver said waiting for Whidbey will have little impact on Microsoft developers. But because Yukon promises to .NET-enable SQL Server, its delay could slow adoption of the .NET Framework. "Oracle or DB2 customers who were planning migrations [to Yukon] may re-up their existing databases' licenses instead," he said.

"Yukon wasn't delayed because of Whidbey. Whidbey was delayed because of Yukon," Driver added, noting that although the two products are interrelated, the market isn't dependent on anything in Whidbey yet.

"When Yukon arrives, it will have a dramatic impact on data access in the .NET architecture," said Forrester Research Inc.'s vice president and research director, Mike Gilpin. "Microsoft is very good at building development tools. But they don't feel constrained to get things out the door by a certain date," he said.

As recently as Feb. 23, when asked whether the company was on track to deliver Whidbey by the end of 2004, Microsoft's Prashant Sridharan, a senior product manager in the developer division, said, "yes." ■

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Software FX gets a taste of its own medicine

Self implementation increases understanding of customer needs

Most developers agree that the one thing you can count on with code is that it will change. When changes happen, most of us don't have the time to go through each line of code. Although components aren't an absolute requirement for development, they can save you significant time when making code changes. Components reduce the mundane engineering that developers worry about like portability, interoperability, scalability and performance. And that's a big advantage.

So, if you think of components not as something that eliminates the need to write code, but instead as something that makes the process of writing code in a larger system manageable; you may have come up with a solid conclusion. The understanding that having a component-based application is important, not because somebody told you so, but because you understand the benefits it brings to the development process.

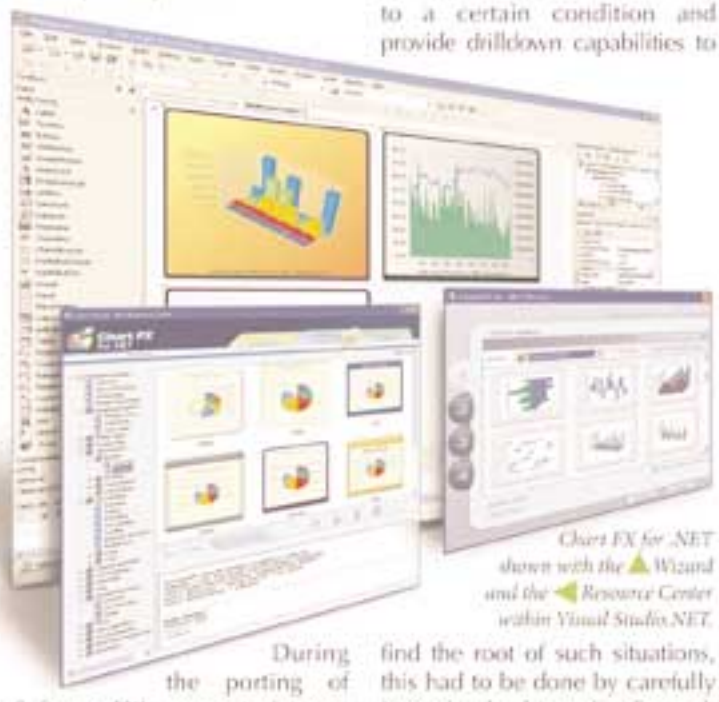


Chart FX for .NET shown with the ▲ Wizard and the ◀ Resource Center within Visual Studio.NET.

During the porting of Software FX's corporate intranet to ASP.NET that we came to experience and realize what .NET had to offer and the challenges involved with porting a functional application to a new platform. To us it was like *a taste of our own medicine*, as most of our intranet reports were built using our own product, Chart FX.

Interestingly, our developers had little problems or concerns connecting Chart FX to a myriad of data sources like SQL, XML and text files coming from external distributors. Similarly, they didn't report any security, performance or scalability issues; or complain about porting old Chart FX code, most of which were legitimate concerns when we decided to make the switch to .NET.

Instead, we quickly realized our developers spent an unusual amount of time coding business rules and logic that would help upper management visualize areas that needed attention to make critical business decisions. Ultimately, we concluded that developers could not divorce themselves from coding and configuring data-presentation components since they were coupled directly to the data extraction process. Therefore, they couldn't embrace the code-behind concept that separates code from the presentation layer. For example, we wanted chart markers to be colored according to a certain condition and provide drilldown capabilities to find the root of such situations, this had to be done by carefully inspecting the data and coding such conditions into the application.

This way their main coding effort was invested in making the chart reflect these conditions, yet they were able to come up with truly astonishing charts in terms of presentation. The Chart FX for .NET Wizard and Resource Center were crucial to achieving this goal with little or no development efforts on their part. To us, that was a major accomplishment since Chart FX for .NET provides over 800 properties, methods and events that they didn't have to learn before they could be productive with our tool. The last thing you want to do when porting an application to .NET is spend significant resources learning how third-party components work and behave.

From Primary Care to Specialist

However, in the end we found ourselves in a situation where the GUIs, and especially the charts, were tightly bound to the data. And as a result, if any business rules changed or any of our data itself changed, it had this tremendous rippling effect throughout our code. We knew this situation would make our intranet unable to respond to future business needs. In other words, an application that although built with the latest .NET technology, was resistant rather than resilient to changes.

This situation reached dramatic proportions when our developers were investing countless hours trying to satisfy the information needs of our sales, marketing and support departments. At this point, they were concerned that we were diverting from the original project and were still far from completion.

The solution, to us, was simple: *Chart FX Extensions*.

With these extensions, Chart FX provides easier integration to connect more meaningfully with your data. This means developers are no longer required to spend countless hours configuring a generic charting component to specific data. Instead, the Chart FX Extensions can be stitched together to adapt to data sources enabling organizations to quickly and economically gain access to specialized solutions that meet unique business needs.

To the right are a series of snapshots about the Chart FX Extensions and how we were able to consume them for our own benefit. In the end, Chart FX had the cure for what ailed us.

How does marketing keep track of where products sell?

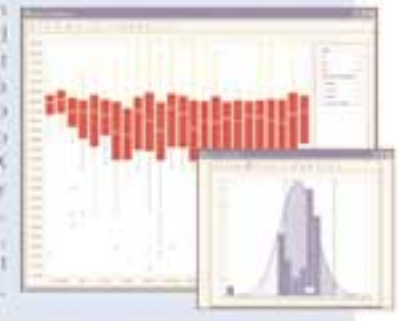
This is performed by a different set of queries that integrate data from our internal point of sales system as well as data coming from external distributors, each of which has its own different IT system. We ended up with an ASP.NET page that would take data from a variety of sources, including SQL and XML, and map the data using universally supported SVG images. **Chart FX Maps** would simply take this data source and would allow logical groupings and views that would otherwise take weeks to code. Get more information at www.softwarefx.com/maps.

How do our managers slice and dice our sales data?

We OLAP-enabled our point of sales system using SQL Server Analysis Services and integrated **Chart FX OLAP** and ADOMD to connect to a multi-dimensional data source that is navigated without additional efforts from our developers. The result: a simple ASP.NET page that exposes a chart with a powerful, yet simple, user interface that allows data pivoting, drilldown and slicing to present data views that would otherwise take months to code. Learn more at www.softwarefx.com/olap.

How do we analyze thousands of leads?

Populating and configuring a charting solution with large datasets is not easy, the chart looks clogged and it is difficult to read. **Chart FX Statistical** allows us to focus on data analysis, quality control and data modeling on processes that generate large amounts of data like trial downloads and web traffic. We bound the chart to the database and the Chart FX Statistical extension quickly produces descriptive statistics, correlations and SPC charts, among others. Get more at www.softwarefx.com/statistical.



How can our staff react immediately to support requests?

Our developers built a real-time data extraction application from on-line newsgroups, Microsoft Exchange Server and support accounts that uses **Chart FX Real-Time**'s server-side in-memory data storage to create charts with open support issues that are displayed in real-time in the browser without the need to manually refresh. See more at www.softwarefx.com/realtime.

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Artix Hits the Mainframe

New Iona tool creates on-host maps from SOAP to CICS, IMS

BY EDWARD J. CORREIA

Integration solutions developer Iona Technologies Inc. will leverage its experience with mainframes and online transactional processing to market Artix Mainframe 2.0, the first version of the company's mainframe Web services-enablement software that runs on the host itself. Released in late February, the software targets CICS and IMS transaction systems on IBM hardware. "Iona is not new to mainframes," said Jody Hunt, director of product marketing for Artix. "We've been service-enabling the mainframe since 1997, and we have many large customers pushing millions of transactions through our products today," he said. The majority of these systems, he added, are processing real-time, online transactions. "That's where we cut our teeth."

For companies with large investments in mainframe hardware and technical staff, Hunt said it makes good financial sense to reuse those assets, but many companies are reluctant to change working systems. "It's running as it is, and they don't want to mess with it. Noninvasive [software] is the order of the day."

Hunt said Artix Mainframe is less intrusive than competitive on-host solutions, which often employ a process model that generates code to be compiled for each mainframe service or task. "We don't believe that [model] scales," he said. "We use a single-host process that interprets the runtime information when it receives a Web service request and uses that information to do the translation from the inbound SOAP request into a COBOL copybook in the back-end format."

A COBOL copybook, Hunt explained, is analogous to a C-language include statement, and becomes a native part of the mainframe system, enabling communication without middleware between mainframe and a .NET client, for example. "Our processes translate inbound SOAP messages directly to CICS or IMS transactions. There's no middle tier required. And we integrate with host-based authentication and authorization systems."

Client applications can be developed with any WSDL creation tool, including Microsoft's Visual Studio .NET, BEA's WebLogic or Iona's own, he said, which also maps COBOL copybook fields to their equivalent SOAP types and generates the necessary COBOL runtime code for the mainframe.

Artix Mainframe 2.0 is available now for IMS and CICS running on IBM's z/OS and OS/390 servers. Pricing is based on mainframe processing capacity, and will typically range between US$125,000 and $150,000, Hunt said. ■

NEXT JOB

◂ continued from page 1

we should be able to plan them together.

Would that require a new application, a new framework?

It requires all sorts of things. It requires the Web as a put as well as a get. The first Web browser actually did that. It was called the World Wide Web.

There's also work on the social aspects, security and that sort of thing. Being able to make sure you know who you're talking to. There are all sorts of other things, as well. There's work on annotations, being able to comment or put a sticky note on someone else's Web sites.

There are applications for looking at photos on the Web, and there are applications that put photographs on the Web, but they are not the same. Most Web pages are not made by being connected to the Web. Most Web pages are made by the author's putting them through some sort of production process and uploading them. I think it's rather complicated. So, there's work in that area.

Then, there's the whole Semantic Web thing. The Web at the moment is browsable by human beings.…If you want to write a program to analyze the weather, for example, even though all the data about weather is out there on the Web, if you want to write a program to analyze it, it's really difficult. You go to all the Web sites to read the weather, it's time-consuming and it's error-prone because it's not obvious which information is the same. The problem of data on the Web is the role of the Semantic Web.

What's happening with the Semantic Web?

It took a big leap forward [on Feb. 19]. We published two core legs of the Semantic Web, [one of which was] RDF, which is the most general format for publishing data and being read by different applications. We're the one that made it.

What will it take for people to say, "Wow, this is something I need to add to my Web site"?

People will start to feel that when they access some data that they didn't really think was relevant, they hadn't thought was relevant to the problem at hand, and suddenly, their problem gets connected to some other things.

Instead of just saying, "Which of my friends' names begin with T" or looking into accounts and saying, "Which of our accounts are overdrawn," you could say, "Which of my friends' names start with T and also are representatives with a company and have sold to companies whose accounts are overdrawn?" You could start to connect personal information to company information.

To answer questions within a company, you've got to reach across boundaries. You've got stovepipes of information. You have HR information. You have totally separate information for bug reports and customer satisfaction.

You might have another, for example, for documentation. We find that we were tracking a customer's problem, but most of those documents left the company, and when we left the company, we should have kept them. So let's find out who else has written documents which are being used by people who are tracking bug reports for processing customers who have this problem.

At the moment, what we're looking at for this is huge monster applications like the pre-Web, which are document databases. That didn't work because everyone wanted to operate it a certain way. It's much better to let each part of a company have a Web site, and they're linked to each other. Let the financial folks organize things how they want, and let manufacturing control people organize their things how they want, and then merge them. Where they have things in common like people or times or places—they have to be able to connect them.

What about security?

Whenever you make a powerful tool, you have questions about if it's going to be used in the wrong way, and privacy, for example. You've got protocols that stress privacy on the Web. People were slow to use rather powerful technology to shop online unless there was a way of checking quickly whether the Web site has a privacy policy which is reasonable. You're obviously going to make sure that people's information is accessible within the company and not outside. You don't want, arbitrarily, people's salary information being accessible to anybody else. So, privacy is an issue which is very important. ■

CALL HIM SIR TIM

Tim Berners-Lee on Dec. 31 was honored by Queen Elizabeth II as a Knight Commander, Order of the British Empire for "services to the global development of the Internet."

According to Berners-Lee, the royal honor acknowledges that technologists change the world socially in addition to inventing gadgets. "I think that's the feeling of a few computer scientists that it was good that one of us was chosen. It shows a certain amount of appreciation," he said.

Indeed, he said, the recognition isn't just for his own personal contributions, but also reflects well on the World Wide Web Consortium. "I take it to mean 'Keep up the good work,' said Berners-Lee. "Some of my colleagues say, 'Congratulations to the W3C.' It's an encouragement to keep it as one Web rather than lots of little ones."

—Yvonne L. Lee

WINDOWS CE

◂ continued from page 1

all the tools in one place." There's also a new window that displays the device-specific code being developed along with Windows CE's shared source. "In the past you had to bounce back and forth between windows," which he said was a top developer complaint.

Platform Builder now includes 50 drivers, Microsoft's term for board support packages that Starkweather characterized as production-quality. "We used to include sample drivers that developers would look at, customize and then use. And we heard that most of the development time was spent on drivers." The new drivers are ready to use, and have been optimized for major designs based on ARM, MIPS, SH and *x*86 processors, he said, adding that documentation and tutorials also have been improved.

As a pre-emptive strike against the dangers of malicious attack, security features in CE 5.0 are now being turned on by default wherever possible. "Each component is now set to the maximum level of security," said Jeana Jorgensen, a product manager with Microsoft's Embedded Devices Group. Individual developers and OEMs will have the ability to lessen security at any level, she added.

Jorgensen said that while Windows CE has yet to face the virus threats suffered by its desktop namesakes, there is a perception that it might. "Because they share the same seven letters, people think it's vulnerable to Windows desktop viruses," she said. "Someday there will be serious attacks [on Windows CE], and this puts things in place so we're ready," added Starkweather.

Windows CE 5.0 also will implement Dr. Watson error reporting, which in addition to its usefulness as a debugging tool, can help identify future security flaws, Jorgensen said. "All of the feedback goes directly to Microsoft so we can understand vulnerabilities at the OS and app level" and decide who is most appropriate to fix the problem, Microsoft or the application developer.

Pricing for Platform Builder for Windows CE 5.0 will remain at US$995 per developer seat. Windows CE-based devices are expected to begin appearing as soon as late summer. ■

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Palm's New Cobalt Has BeOS at Its Base

Now modular, operating system lets developers plug in best features for app

BY EDWARD J. CORREIA

More than three years and a spinoff after Palm Inc. announced that it would acquire the BeOS, PalmSource Inc. has unveiled Cobalt, the sixth edition of Palm OS that now is based on the Unix-like computer and appliance operating system developed by former Apple Computer Inc. visionary Jean-Louis Gassee. The company also said it will continue to develop Palm OS 5, now called Garnett, but will no longer advance Palm OS 4, effective immediately.

Released to licensees in December, Cobalt became generally available at the PalmSource Developer Conference on Feb. 10. Important new features include multitasking and multithreading, memory protection and an increase in memory addressable by applications to 256MB from 128MB in Palm OS 5 and 16MB in version 4.

According to John Cook, product marketing manager for Palm OS Cobalt, while little remains of Cobalt's Unix roots save a few POSIX calls, the most significant contribution of BeOS to Palm's new operating system was its modularity. "We've taken the critical subsegments like communications, security and multimedia functionality and set them up as frameworks so that information can be plugged in." This benefits developers, he said, by permitting them to insert any needed functionality.

Cobalt also offers built-in security. The Web browser is equipped with SSL and TLS for secure e-commerce connections, the app data synchronization tool now can permit or block individual objects during backup and restore operations, incoming applications can be secured through signed code, and an authorization manager protects data from intruders.

All Cobalt applications are now extensible through schemas, which simplifies customization of Palm's PIM apps and, the company claims, makes future changes to ISV apps simpler and more reliable. A revamped sync architecture also supports schema extensibility, can handle records larger than the 64KB barrier of previous versions, and uses drag-and-drop synchronization; developers no longer have to write custom conduits for their applications. Sync is supported over Bluetooth, Serial and USB.

Cobalt's pluggable architecture allows capabilities such as multimedia codecs and security protocols to be added as needed.

Cobalt's PIM apps are now extensible via schema; new functionality appears automatically the next time the app is run, claims the company.

ARMED WITH PROTEIN

PalmSource has developed a new ARM-native API, called Protein, which Cook likened to Microsoft's Win32. "If people know how to develop to Win32, they don't necessarily have to be concerned whether [their application will be running on] Windows NT, XP, etc. We needed a concept like that." Applications built to Protein will be compatible as the OS moves forward, he said. "We didn't want to tie [the API] into one specific release of the operating system."

PalmSource also in February introduced an Eclipse-based version of its Palm OS Developer Suite. "The move to Eclipse was designed to create a better integration framework for Palm's IDE," said Cook. That IDE now targets all Palm OS versions, either individually or as so-called PACE Native Objects (PNOs) that can run on either Garnett or Cobalt. PACE, the Palm Application Compatibility Environment, simulates Palm OS 4 on Motorola's DragonBall 68,000 processor, and enables older applications to run on future operating systems. "This mechanism creates native ARM code under Cobalt, and PNOs," which Cook said are sometimes also referred to as fat binaries. "These applications work in both worlds; they have a 68,000 part and an ARM part and can go back and forth between the two."

Cook said that by maintaining both Garnett and Cobalt, PalmSource can effectively address the variety of devices and applications in use today. "If you're looking at something in the traditional PDA class, [Garnett] is a fine way to go. It has lower technical overhead, you can use slower processors and less RAM and ROM, and it's easier to develop a quick product on that." Garnett devices, he said, require a minimum of 2MB ROM and 8MB RAM.

"What you'll see for Cobalt going forward is higher multimedia and screen resolutions," he continued, "and enterprise applications where certain types of security might be significant. And if somebody wants to build a tablet or address larger memory and other types of storage devices, you could use Cobalt," which carries a minimum RAM/ROM requirement of 16MB each. Screen resolution is now 320 x 480 pixels including a customizable "dynamic input" area.

Developers waiting for Palm OS-based Web services, rumored to be included with this release, will have to keep waiting. "We are investigating SOAP capability as part of a set of technologies we've been developing, but there's no time line for delivery," Cook said. ▮

I-Logix Automates Rhapsody Testing

Automatic Test Generator covers code for UML

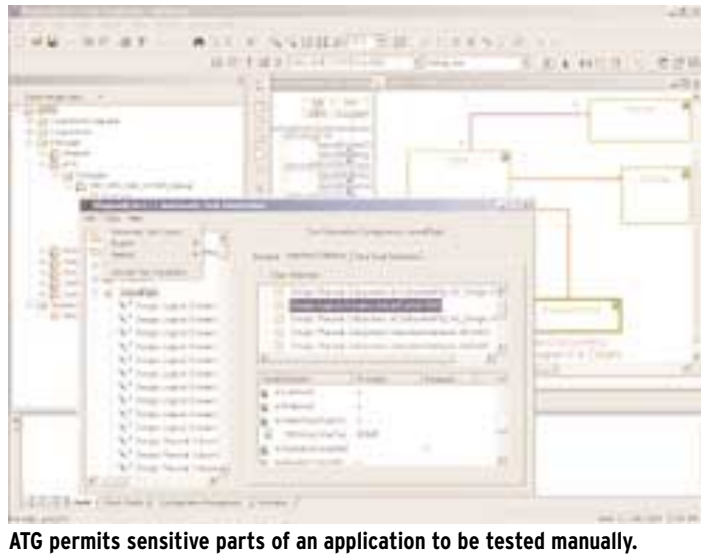
BY EDWARD J. CORREIA

While developers using model-driven application tools might be shielded from manual coding, testing those models still forces many to tinker with code. No more, says I-Logix Inc., which in late February unveiled Rhapsody Automatic Test Generator, an add-on to its Rhapsody UML-based embedded development environment for Windows that it claims can automatically build test cases from Unified Modeling Language models.

"We've speeded up the design process [with UML], but the testing still takes the same amount of time as it did before," said Moshe Cohen, director of technical business development at I-Logix, adding that in the absence of automation, developers and QA people building test cases usually involves manual script or macro programming to cover all of the program's code. "This is the most painful part of the development process," he said.

According to Cohen, the Automatic Test Generator (ATG) creates Sequence diagrams by analyzing all elements of the models built by Rhapsody. "We look at all the model's classes and states, and all the operations and transitions in your code, and we generate test cases that will cover all elements. That translates into complete code coverage."

Cohen said that for developers who still want to write all or part of their test cases manually, "we read in and analyze their test cases, figure out what code is covered, and generate test cases for the rest of the design." Cohen added that ATG complements Test Conductor, a Rhapsody add-on that executes test cases one at a time, and is most useful for test cases that need to be developed manually.



ATG permits sensitive parts of an application to be tested manually.

Rhapsody Automatic Test Generator for C++ is set for release by June; a version for C will be available this year, Cohen said, adding that the company also plans an Ada version but has not set a release time line. Pricing will start at US$25,000. ▮

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The Big Bus Rolls In

Web services are leaving their mark on message-oriented middleware by driving it toward ESB capabilities

BY ANDREW BINSTOCK

In March of this year, IBM Corp.'s premier middleware product, WebSphere MQ (née MQseries) celebrated its 10th anniversary. Like most message-oriented middleware (MOM), it spent much of the past decade toiling in the obscurity to which niche products are consigned. The past few years, however, have seen a renaissance in the middleware market, due in large part to enterprises' need to integrate business processes.

Previous solutions, such as enterprise application integration (EAI), have fallen from popularity because they were viewed as costly and difficult to implement. In their stead, lighter approaches such as Web services have gained popularity. Web services, however, depend on a messaging protocol, and this particular need has been one of several drivers for the renewed interest in middleware.

Another important driver was Sun Microsystems Inc.'s decision to include Java Message Service (JMS) in the J2EE software stack. By standardizing middleware APIs via JMS, Sun and the shepherds of Java freed MOM from one of its traditional limitations: proprietary programming interfaces. JMS spawned a new slate of vendors that competed to provide the best and fastest standards-compliant MOM available. And because of this competition, pricing dropped considerably, making this solution more attractive that it had ever been.

MOM vendors, however, soon began to search for ways to differentiate their products. And one of the key points they hit on was improving JMS capabilities in significant ways, particularly expanding its support for Web services. The new features gave birth to a distinct category within middleware, called the Enterprise Service Bus (ESB).

WHAT IS AN ESB?

The term seems to have been coined by Roy Schulte, vice president of Stamford, Conn.-based technology analyst firm, Gartner Inc., to refer to a layer of services that ride above the middleware layer.

As time has passed, however, the specific nature of those services and of the functions of the middleware became blurred. According to Bob Bickel, former general manager of Hewlett-Packard Co.'s middleware division and currently vice president of strategy at app-server vendor JBoss Inc., "A prime difficulty of understanding ESB is getting agreement on the definition. A good working definition is a standards-based solution that includes a middleware layer and a set of services tied to the middleware that provide application integration and make workflow easier."

The specific services that ride above the middleware generally include explicit support for Web services communica-

▸ continued on page 28

BIG BUS

◂ continued from page 25

tions protocols (SOAP, WSDL, UDDI), data transmitted in XML, a transformation engine based on XSLT, and frequently, a rules engine that handles event processing.

"A key point," noted Gordon Van Huizen, CTO of middleware vendor Sonic Software Corp., "is that the ESB paradigm is event-driven. By setting up the rules for an event, when it occurs, the ESB knows whom to route what data to, what transformations need to take place, and how to marshal the data correctly so that the processing is fully automated."

Van Huizen added that this feature makes the coding of applications considerably easier as well. No longer are developers required to identify specific routing addresses for delivery of individual items, nor do they need to hand-code data conversion routines or adapter access. In addition, the JMS interfaces are all standard, so experience with one product can be leveraged with another.

Ron Schmeltzer, senior analyst at IT market intelligence company ZapThink LLC, pushed the paradigm further. "The real value of the ESB is that its actions are asynchronous. The word 'bus' unfortunately tends to communicate the opposite idea, whereas in fact the ESB is a distributed paradigm and one that crucially removes the application server from the mix. Now the transactions can be completed using Web services and Java technologies without ever communicating with a J2EE server."

As Van Huizen pointed out, "This makes scalability much easier. The bottleneck is removed." For components that might need a container to execute, Sonic's ESB product provides Java container services.

WHO NEEDS AN ESB?

Companies with middleware in place and no intention of using Web services for process integration will find little benefit in ESBs. However, sites that are considering a loosely coupled architecture via Web services are likely to find ESB capabilities compelling.

The same goes for sites that use J2EE servers for processing that could be performed by ESB solutions. Jason Bloomberg, a senior analyst at ZapThink, pointed out, "Scaling application servers is not easy. So, when a company is contemplating a distributed architecture and assembling the pieces around a process that can be asynchronous and loosely coupled, ESBs will make a lot of sense."

Another analyst firm, IDC, threw in its opinion in a 2003 executive brief: "The use of an ESB not only allows organizations to link older applications to newer, browser-based front ends designed for Web interaction, but the loosely coupled architecture of the ESB also allows for the easy creation and addition of newer applications and connections as business needs evolve. Most important, the ESB infrastructure provides flexibility."

Fortunately, because there are so many vendors competing in the ESB space, and many more predicted—mostly from the Web services community—pricing is favorable to prospective customers. And most vendors allow interested parties to download and try evaluation or developer versions of their products. And given that most vendors use JMS as the MOM layer, much of the code used in testing one product can be used anew in testing another.

Curiously, despite widespread interest by the open-source community in both Java and Web services, there is no open-source ESB available, nor have any of the major standard open-source organizations announced a forthcoming product of this kind.

THE FUTURE OF ESBS

Analysts agree that eventually all middleware vendors will be drawn into the ESB vortex. They expect that vendors all will add ESB services and features in varying combinations to their existing middleware plumbing.

"As such," said ZapThink's Schmeltzer, "the ESB moniker is really transitional. Eventually anyone who provides services-oriented architecture [SOA] infrastructure will provide ESB features." And at that point, the ESB moniker might even fade away. Even today, that term is by no means universal. IBM does not use the term, nor do some analysts, such as Meta Group Inc.'s Tom Murphy: "To me this is just an SOA. A bus seems too implementation-specific as Web services really only think about the [interfaces, formats and protocols]. And indeed if ESB features do become absorbed into the larger messaging infrastructure, then the term is likely to disappear," he said.

The ESB's actions are asynchronous—that's the real value, says ZapThink's Schmeltzer.

Exactly which vendors will be most successful three years hence is the object of some contention. Gartner's Schulte places his bets squarely on Microsoft's Indigo product and IBM's WebSphereMQ messaging suite. (See sidebar, "Who's Riding the Bus?" page 29.)

In a note to Gartner clients, Schulte opined: "Indigo's architecture appears to be very advanced and complete. It is

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designed to be fully distributed, scalable, and extensible. It reportedly will support multiple protocols, QoS, and non-Microsoft Web services standards. Because Indigo will be built into the Longhorn version of Windows and may also be available for Windows XP and Windows Server 2003, most enterprises will run it. Indigo probably will become the de facto standard in Microsoft-centric networks."

Schulte said he expects IBM to ship its complete suite of ESB tools and services in the second half of this year. Then, presuming it can leverage its substantial installed base of WebSphereMQ users, it will likely become the leading enterprise-scale provider of ESB, even if it doesn't use that three-letter acronym.

Whoever comes out on top, it's clear that Web services have left their imprint on MOM by pushing it toward ESB capabilities. The result is that a few years hence, with the notable exception of real-time software, it will be almost impossible to obtain vanilla messaging middleware. The old, familiar middleware design of packets containing header fields and a data payload will have been replaced by layers of services. So, communicating at a low level with the messaging layer will be a thing of the past. What effect this layer of enterprise services will have on other parts of the infrastructure, especially application servers, remains to be seen. ▮

Who's Riding the Bus?

BY ANDREW BINSTOCK

The main proponents of Enterprise Service Buses are the former pure-play Java Message Service vendors. And as it did in the heyday of JMS, Sonic Software Corp. has taken the marketing lead and forced all other vendors to play catch-up. Its flagship product, SonicESB, runs in conjunction with the company's JMS layer.

SonicESB includes the standard complement of Web services protocols, an XSLT transformation engine, and container services for Java objects that require them. Customers who prefer not to use only Web services for connectivity to back-end systems can avail themselves of a wide set of connectors that Sonic sells separately. If a customer already has JCA adapters in place, SonicESB will work with those as well.

The other major player in the ESB market is Fiorano Software Inc., which for years maintained a running feud with Sonic as to whose JMS products offered the best performance.

Fiorano's entry is Fiorano ESB, formerly called Tifosi. It supports all the same standards as Sonic, but adds several new features that will be compelling to prospective customers. These consist primarily of coarse-grained services that can be added to the ESB configuration. The services include POP3, FTP, SMS and zip format support, and can run programs written in scripting languages such as Perl and Jython. The tools bundled with Fiorano ESB enable these services to be configured by drag-and-drop interaction with the configuration software.

London-based SpiritSoft Ltd. is another JMS vendor touting an ESB-like product. The company's SpiritWave software offers standard ESB functionality enhanced with the ability to perform advanced data and object caching. SpiritSoft's cache implementation continues the vendor's tradition of implementing standards at the earliest opportunity. In this case, it has implemented the proposed JCache (Sun's Java Community Process JSR 107) specification as its principal differentiator.

There are a number of other vendors that sell ESBs or ESB-like products, among them Iona Technologies PLC (Artix), KnowNow Inc. (Event Routing Platform) and PolarLake Ltd. (JIntegrator).

Notably absent from this list are the three heavyweight messaging vendors: IBM Corp., Microsoft Corp. and TIBCO Software Inc.

While IBM announced in 2003 that it would be selling an ESB product, it has subsequently changed directions. According to Scott Cosby, program director for WebSphere Business Integration, the company sees ESBs not as a single thing, but as a collection of different capabilities. It makes those capabilities available through its WebSphereMQ middleware plus the WebSphere Business Integration event broker and message broker products. With the support for JMS and Web services in the messaging software, IBM feels it offers ESB functionality without a specific ESB-named product. It expects to add more services to this mix during the next year.

In October 2003, Microsoft announced its new messaging infrastructure, code-named "Indigo," which will have all the capabilities of an ESB. The product will be part of the "Longhorn" release of the operating system, which Microsoft expects will enter beta in the second half of this year.

High-performance middleware vendor TIBCO has no ESB products. Moreover, according to company spokesperson Robin Stoecker, the company has no plans to deliver ESB technology in the foreseeable future. ▮

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WRQ

WHITE PAPER

.NET or J2EE?
Making the best choice for your host strategy

As recently as two years ago, there was active debate over the staying power of Microsoft®'s .NET vs. Sun's Java 2 Platform, Enterprise Edition (J2EE). Which technology would emerge as the leading platform for developing new web applications?

Now that the dust has settled, each platform has managed to carve out a respectable niche for itself. In fact, some organizations have already deployed strategies around one or the other of these frame-works. But many businesses with large investments in legacy systems are still weighing the merits of the two platforms.

IT professionals in those businesses are asking questions like these: To what extent will choosing .NET or J2EE influence my host strategy? What are the best practices for success in each environment? Will the J2EE Connect Architecture (J2CA) make it easier to reuse my legacy assets? What if I'm planning to migrate off my host systems? This paper will provide information for the decision-making process, especially in the context of legacy-intensive environments.

Worthy Competitors

Although the rivalry between .NET and J2EE continues, neither platform is expected to dominate business-application development in the near term. Instead, their roughly equal capabilities will win roughly equal market share for .NET and J2EE. That means the two technologies will be used in 80 to 90 percent of business-application development over the next five years.

How does this affect your application-development work today? IT organizations can choose one or both of these de facto standards (or even defer the decision for a while). Ordinarily, only large businesses are in a position to adopt both .NET and J2EE, due to two circumstances: 1) they have sufficient resources to train their development staff on both platforms, and 2) they have the capacity to develop best practices for managing environments that include elements from both platforms.

"We'll always be working with multiple platforms," said a spokesman of a large telecommunications provider recently. "For tactical projects we tend to use Microsoft because they try to ease the development pain. For strategic projects we tend to use the Java technology." Research and advisory firm Gartner gives additional context to this notion. That group predicts that 95 percent of large businesses will use both Microsoft and Java technologies as integral elements of their e-business strategies through 2006.

Unlike their larger counterparts, small and midsize organizations won't have the luxury of supporting both platforms simultaneously. Due to limited resources, they will probably be forced to choose between .NET and J2EE. And because Microsoft has established a strong presence in small and midsize businesses, .NET can reasonably be expected to prevail in this market.

.NET: The Basics

.NET has caused confusion ever since it was introduced. From its proprietary programming models to its unclear association with web services, .NET has been a slippery concept for most IT organizations to grasp. Adding to the confusion were Microsoft's inconsistent branding efforts, which linked .NET with products having little to do with .NET (for example, .NET Enterprise Servers).

.NET is not a programming language, but rather Microsoft's new platform for delivering applications. Building on the popular COM+ architecture, .NET contains VB.NET (a new version of the Visual Basic programming language) and has introduced a new object-oriented language called C#. .NET also offers ASP.NET, an enhanced version of Active Server Page.

Language interoperability is the driving force behind .NET. It uses Common Language Runtime (CLR) software, designed for the Windows environment, which allows a wide range of programming languages to freely share and extend each other's components. Because .NET supports more than 20 different languages, it is well-suited for organizations that have many COBOL, C++, Visual Basic®, or even Java programmers.

J2EE: The Basics

J2EE has also been subject to some confusion, although to a lesser degree than .NET. Just as .NET is not a programming language, neither is J2EE. Instead, it is a platform from Sun Microsystems based on a series of standards for developing Java applications and implementing web services.

J2EE has an enterprise-level component strategy with its Enterprise JavaBeans (EJB) architecture that is geared to future scalability. EJBs also allow for multiple user interfaces. In addition, J2EE has servlets (Java applications running on a web server or application server), and JavaServer Pages (JSPs), which simplify the process for presenting dynamic content on web pages.

The cornerstone of J2EE is the Java object-oriented programming language, which allows developers to write software for one platform and execute it on another, with no modifications. Portability is a key feature of the J2EE framework.

Comparable Abilities, Different Strengths

Both .NET and J2EE are good platforms for developing and hosting business applications. Both support n-tier architectures via client- and server-side component models for assembling enterprise applications. This allows for use of either fat or thin user interfaces with both platforms. However, .NET and J2EE are far from identical, and each platform has distinct strengths.

The primary strength of .NET is its use of multiple programming languages running on a single platform. This eliminates the programming language as a barrier for adoption. Further .NET strengths include ease of use and speed of development as programmers might be transitioning from COBOL or C. (In contrast, transitioning to Java usually takes greater skill in object orientation.)

J2EE takes .NET's multiple programming-language/ single-platform paradigm and turns it around: The primary strength of J2EE is its use of a single programming language capable of running on multiple platforms. This eliminates the platform as a barrier for adoption. Further J2EE strengths include vendor neutrality and the active involvement of a large, open-source community.

Integration Capabilities

The majority of all business application-development projects require some form of application integration. A recent Gartner survey indicated 43 percent of IT managers regard integration with packaged applications as one of their main concerns, while 47 percent regard integration with legacy applications as one of their main concerns (Gartner Strategic Analysis Report R-18-0318). Because existing systems—both packaged and legacy—represent a sizable investment, IT managers do not treat these integration challenges lightly.

Evaluating .NET and J2EE for integration superiority is not a simple proposition. At first glance, Java seems better suited to integrate applications due to its support of J2CA, Java DataBase Connectivity (JDBC, an API that provides universal data access), and web services.

Packaged apps: Does J2CA provide an integration edge? Part of the J2EE standard, J2CA prescribes the architecture and APIs for adapters connecting the J2EE application servers and existing non-Java applications. By using J2CA, packaged-application vendors no longer need to customize their product for each Java environment (e.g., any J2EE application server). Likewise, J2EE application-server vendors do not need to add custom code whenever they want to add connectivity to a new application.

However, in order to integrate with an existing application (such as SAP or Siebel), J2CA depends on a deployable unit called a resource adapter. The resource adapter plugs into an application server, providing connectivity between the existing application (via its native APIs) and the Java application server.

Today, this integration approach has a significant limitation: Only a small number of packaged-application vendors offer a J2CA resource adapter. That number is certain to grow in the coming years, but adoption of J2CA will remain slow due to its complexity, and due to competition from web services standards.

The .NET platform takes an entirely different approach. It contains an application integration building block composed of a number of Microsoft-based server products, including BizTalk Server (an integration broker).

The .NET approach to integration is considerably more product-oriented than a method using a common programming model. As such, it forces developers to learn a new product, instead of working in their familiar development environment. However, as with J2EE, web services will become an increasingly common way to integrate source systems within .NET.

Legacy apps: Can *either* platform make integration easier? While packaged applications present a definite integration challenge, legacy applications constitute an even more difficult integration category. Consider a host application that was developed in-house 20 years ago, and written in COBOL: No J2CA resource adapters are available, nor will they be available, to help integrate these applications in a J2EE environment.

From an integration standpoint, JDBC is actually more promising than J2CA. This API provides access to virtually any data source, from relational databases to spreadsheets and flat files. With a JDBC driver, all corporate data can be connected, even in a heterogeneous environment. In addition to its support for actual relational databases, JDBC can also support emulated relational models based on legacy information sources. But to do this, JDBC requires an integration product that can map the legacy-application functions to emulate a relational database model.

The .NET platform, with its dependence on Microsoft BizTalk® Server, has the same drawbacks for legacy-application integration as it does for packaged-application integration. So, despite the very real integration potential of .NET and J2EE, both platforms have their associated limitations. And when it comes to legacy-application integration, neither platform can complete the job on its own.

Where Do Web Services Fit In?

Although web services were not conceived as an integration technology, they can be effective in the application-integration process. Web services provide a standard way to expose application interfaces through XML (Extensible Markup Language) and WSDL (Web Services Description Language). They also use a standard way to communicate, via SOAP (Simple Object Access Protocol). These features help reduce the cost and complexity of integration, as well as the cost and complexity of building new applications.

Web services are made even more interesting by the fact that they are supported by both .NET and J2EE, and run equally well on both platforms. Therefore, web services are ideal for bridging the two platforms. However, applications supporting web services today are largely limited to the latest versions of packaged applications such as SAP and Siebel. While more applications are starting to provide a web-services interface, the majority of all installed applications lack the ability to expose functions through XML and WSDL.

And web services might seem even less suitable for integrating legacy applications residing on enterprise host systems, which typically have no APIs. Modifying these applications to build in a web services interface is ordinarily not an option. But technologies are available today that can encapsulate a legacy application's functions and make them available through a web-service interface. Such technologies give enterprises a non-invasive way to make their legacy functions available for new uses.

Legacy-Integration Solutions: Let the Buyer Beware

If legacy integration (or legacy migration) is a requirement, neither .NET nor J2EE will offer a complete platform for your application-development projects. With either choice, you will need a complementary integration product that can help make legacy functions available as relational models or as web services (or both).

Be aware that all vendors of application integration products do not provide equal support for .NET and J2EE. Many vendors have built their solutions exclusively around one platform or the other, heedless of the fact that both .NET and J2EE will continue showing a strong presence over the next five years. Buying an integration product too hastily can tie organizations to a development platform they might not have chosen otherwise.

Therefore, you should look to application-integration vendors that are closely aligned with—and can articulate a long-term strategic relationship with—both .NET and J2EE technologies. That means checking to ensure that a solution offers interfaces such as .NET Class Libraries, COM Objects, ASP, ASP.NET, and .NET web services to support your .NET-based development efforts as well as interfaces like JavaBeans, JSP, and Java web services to support your J2EE-based development efforts.

About WRQ

WRQ builds host-integration, terminal-emulation, and PC X-server software. We've been connecting legacy applications to emerging technologies since 1981. Our expertise helps companies get the most value from their hosts today as they advance their long-term IT strategy. Learn more about our Reflection® and Verastream® products at **www.wrq.com**.

EDITORIALS

Standards Compliance

Those of you who work for privately held companies have the luxury of ignoring the Sarbanes-Oxley Act of 2002. Created largely as a response to accounting-related scandals at Enron, WorldCom and other high-fliers, Sarbanes-Oxley is a sweeping piece of legislation that has broad implications for corporations large and small.

A cornerstone of Sarbanes-Oxley is improving the accuracy and reliability of corporate disclosure, to ensure that investors and the Securities and Exchange Commission can trust the financials. The impact of those laws on the entire information-technology infrastructure is unprecedented, and goes far beyond improving the accounting system.

Like similarly broad initiatives, such as ISO-9000, Sarbanes-Oxley insists that nearly everything be logged, that processes be carefully managed and data be tamperproof. But unlike ISO-9000, Sarbanes-Oxley isn't optional, and large fines and even jail time can await top executives that fail to implement its provisions correctly.

A big part of the act, Section 404, requires new checks and balances; employees who issue purchase orders can't disperse funds, and those with hiring authority can't process payroll. While it's up to corporate executives to define these new processes, software developers will be intimately involved in designing the applications and integrations necessary for compliance. In the case of Section 404 specifically, many of these new checks and balances may require new interfaces and interconnections between systems. Not only that, but the new systems must be inherently secure, above and beyond the firewalls and other protection schemes put in place by network and systems administrators.

Additional Sarbanes-Oxley provisions will phase in over the next few years. While not all of the required functionality must be installed immediately, compliance solutions should be architected with all of the provisions of the act as part of the overall design, to avoid having to rip and replace early work in order to accommodate later requirements. That means front-loading much of the design process.

Let's get to work.

Waiting for 'Whidbey'

While competitors may be rejoicing at Microsoft's delayed launch of "Yukon" and "Whidbey," this news isn't good for loyal Windows and .NET platform developers. Indeed, pushing back Yukon (the successor to SQL Server 2000) and Whidbey (Microsoft's next version of Visual Studio .NET designed to accommodate new Yukon features) takes some of the wind out of .NET's sails, and could slow adoption of Windows Server 2003.

Microsoft's .NET solution stack has been conspicuously missing its database. SQL Server 2000, while a very successful product for Microsoft and its customers, is essentially pre-.NET technology. While .NET apps have full access to SQL Server 2000 through a native data provider, that's very different than actually using the database as a platform to program .NET apps, or to use .NET languages and the Common Language Runtime to program the database.

While we applaud Microsoft's decision to delay the database, rather than follow the customary practice of shipping early and then addressing shortcomings in service packs, we're disappointed that the long-awaited product won't be ready for another year. ▮

GUEST VIEW

THE DARWINIAN APPROACH TO SOFTWARE REUSE

For as long as software engineering has been practiced, there's been a vision that achieving the Holy Grail of software reuse was "just around the corner." Every new technology generation was supposed to have solved this problem once and for all. Functional programming, object-oriented programming, components, service-oriented architectures—the list goes on. But, if we were to survey software engineers today versus 20 years ago about how close we are to this elusive goal, we'd probably find that we aren't really any closer today than we were back then. There's definitely been a lot of credibility lost in our industry because of this. The quickest way to get yourself booted out of any venture capitalist's office is to say you've got an idea for a product that will solve software reusability once and for all.

There's no doubt, however, that each successive technology generation has contributed important techniques toward reusability. Functional programming ushered in encapsulation. Object-oriented programming introduced polymorphism. Components taught us that a clean separation of interface from implementation is important. And, most recently, service-oriented architectures have introduced loose coupling, allowing the pathways that connect services to be remapped without changing the services themselves—something that's not been possible in previous technology generations.

DANIEL M. FOODY

In addition, with the introduction of modeling languages such as UML, there's now a much stronger push to think more upfront about how an application is designed. Measure twice, cut once.

So with all the progress we've made, why don't we feel any closer to achieving broad-scale reusability? Why can't I take any arbitrary service and reuse it wherever I see fit? Why? Well, unless I was lucky, what I'd probably hear would be: "It wasn't designed to be used like that," "It will take some tweaking to make it do what you want," or any number of other similar statements. On the other hand, on seeing your existing service, I might say: "I can't understand this, it's too complex," "It doesn't exactly do what I want," "It's overkill for what I need to do," or any number of other excuses. You've probably seen something like this replayed a thousand times.

Why do we continually run into these problems? Because we, as an industry, have focused primarily on ways to design for reuse upfront. Unfortunately, the challenge that you as a service developer will always face is that you can't easily anticipate all that consumers might want to do with a service. And even if you could, you couldn't afford the time or complexity to build all of this upfront. While you can get lucky in well-controlled cases, no matter how hard you try, this barrier can never truly be broken: You just

GUEST VIEW

LUXURY LIFE-CYCLE MANAGEMENT

It's been four years since the bursting of the tech bubble, and software development managers are fast approaching the time when many of our most prized developer tools will need upgrades or replacements. I speak, of course, of luxury goods, many of which were last purchased in 1998 or 1999 using vested stock options. Clearly, our industry faces challenges in addressing consumer-product life-cycle issues, given the fact that bonuses have been slashed, current options are under water, and a daily regimen of 93-octane 24-valve engines has been replaced by the South Beach Diet.

In other words, go-go consumerism is dead, and carb-counting is the new business reality. Thus, we must carefully ponder our luxury-goods budgets with an eye toward receiving maximum value and the greatest return on investment.

Take transportation. Many of us are stuck driving vehicles that exceed 50,000 miles. To continue showing up at the office in, for example, a 1997 Land Rover Discovery or 2000 Porsche Boxster would tell top management that we've fallen off the CIO fast track.

I.B. PHOOLEN

So, what to buy? With an eye toward maximizing date-acquisition potential and perceived value, consider the new Mazda RX-8. With a starting MSRP of US$25,180 to $26,680, you can easily afford the payments (be sure to hide the coupons), while talking up the history of the Mazda RX series and the benefits of its unique 1.3-liter rotary engine technology, which generates 238 horsepower and 159 ft.-lbs. of torque. On second thought, don't talk about the torque on that car.

In the compact sport-utility department, the BMW X3 is a fine upstart, with an MSRP of only $30,300 to $36,300. While the fit-and-finish on those vehicles isn't up to BMW's usual standards, the impressive nameplate will inspire confidence in your superiors and envy in your minions.

Alas, we can't turn back the clock. If only the economy and Nasdaq stock index were performing at early-2000 levels, those of us who prefer to ride in true comfort would enjoy the new 225-inch Maybach Type 57 (MSRP: $305,500), or even the 242-inch Maybach Type 62 (MSRP: $357,000). Who wouldn't love that 550-horsepower V-12 with 663 ft.-lbs. of torque? But instead, we must fall back to, say, the equally new Jaguar XJR, which at $59,830 to $75,330 is a veritable steal. Tip: Be sure to opt for the 390-horsepower 4.2-liter V-8, which offers a reasonable 399 ft.-lbs. of torque.

Now that we've straightened out your ride, let's address a more timely matter—the timepiece. The dressy Movado Classic Museum that you've been proud of is, to be blunt, passé. So is the Rolex Oyster Perpetu-

can't see into the future.

While we may not be able to see into the future, hindsight is 20/20. So, maybe, just maybe, we're approaching reuse backward. I certainly believe that proper design and a well-architected infrastructure are important. That said, instead of thinking about reusability as a problem to consider *before* we build software, what if we thought of it as a problem to consider *after* we build software?

To illustrate this, imagine that 10 different project teams in a company need a bond yield calculation service. Normally, the first thought through a software architect's head would be: "We need to form a cross-functional team to gather requirements and build a shared bond yield calculation service." This would work well, provided everyone knows their *real* requirements (not their feature-laden wish list) upfront and that all of these 10 different project teams are actually looking for a bond yield calculation service *at the same time*. Good luck!

Now suppose, instead, we allowed the 10 different project teams to build their own bond yield calculation service to meet their specific needs within their budgets and deadlines. Each team will certainly make different trade-offs, design choices and functionality choices.

After some time period, once all the teams have had the opportunity to understand how well their creation fits their in-production needs, the consolidation phase of the process begins: Going forward, the company will have to choose the top two bond yield calculation services out of the 10 to be used throughout the company. The teams need to choose the two that will remain, then consolidate load to those two that takes advantage of the loose coupling in an service-oriented architecture. The other eight are decommissioned. Survival of the fittest.

Of course, moving forward, project teams would need to use one of the chosen bond yield calculation services rather than build their own. This notion takes advantage of the fact that, while you might not know the right set of trade-offs upfront, after the application is created, you have the information to effectively choose from among multiple options for the best solution for addressing the overall problem.

Consolidation and decommissioning in order to get rid of redundancy in an IT infrastructure is nothing new. This is one of the most important cost-control measures driving companies toward service-oriented architectures. Consolidation, however, has never really been part of an overall software development life cycle—it has mostly been reactionary as organizations are forced to reduce costs.

In order to move from reactionary-driven consolidation into efficient and cost-effective reuse, a lot of changes need to take place. If this approach sounds like it makes sense, we as an industry should formalize it to drive success. What overall process is needed to quickly and cost effectively orchestrate the path toward the reduced set of reusable services? As a part of this, there are some challenging questions. How many redundant versions are too many? How many versions should you narrow it down to? How long should the overall process take? For the process to be effective, these questions would need to be answered upfront so that expectations can be set appropriately.

Beyond the specifics of any process, what types of organizational incentives would make sense to assure success? General Motors, for example, gives bonuses to IT staff for each system they are able to decommission. Combine this approach, perhaps, with a bonus (or additional budget) given to service owners for each consumer that chooses to use their service. Incentives have to be in place to make the teams that develop the best services want to have others consume their services. They can't be forced to support 100 consumers on the same budget with which they previously had to support only one consumer.

In many ways, a Darwinian approach to software reuse needs to be a more well-defined, controlled and measured version of what typically happens in today's haphazard and unpredictable approach. Think about how this might apply in your organization. Is a Darwinian approach a meaningful model for reuse? There's certainly a place for it. ▮

Daniel M. Foody is the CTO of Actional Corp., which sells Web services management software.

al; maybe it's not your father's Oldsmobile, but it's your father's watch. More powerful brands, which demonstrate our modern consumer savvy, include Tag Heuer's Kirium series and Breitling's Crosswind or B-1 Professional.

If that still exceeds your options level, you can achieve great looks at minimal expense with Skagen. The downside is titanium is becoming tired, and you do find Skagen advertised in airline magazines. Still, tough times call for desperate measures, and you have my sympathies. (At least it's better than Timex, or—*shudder*—Swatch.)

Jewelry is always an important style issue and remains vital, even during an economic recovery. Did you know that U.S. diamond jewelry sales in the fourth quarter of 2003 jumped by nearly 10 percent, to reach $9.27 billion? Much of this increase was due to sales of higher-ticket items. That's right—larger rocks, better metals and more elaborate settings for both male and female software development managers. Don't be afraid to demonstrate your financial prowess through the proper accoutrements. Hint: Go for the platinum setting, which can lead to many interesting conversations about the use of that precious metal as a catalyst for many important industrial chemical processes.

Shoes are also important fashion accessories, and while they may not make the man or woman, they certainly help us give the impressions we want. Bear in mind the impact of outsourcing and offshoring on the ranks of middle- and upper-level software development and IT management. If someone's job is going to get whacked, you don't want it to be yours. No matter your budget, make sure that your foot apparel demonstrates appeal, and properly shows that you're too successful and experienced to lay off. Ladies, consider Robert Cavalli, Jimmy Choo or, if money is tight, Finn Comfort. Gentlemen, look at Bruno Magli or Mezlan. After all, if the shoe fits...buy it! ▮

April 1 correspondent I. B. Phoolen likes fast cars, fast food, fast watches and fast compilers. Reach him at ibphoolen @bzmedia.com.

LETTERS TO THE EDITOR

FIGHT TO KEEP JOBS

As a reader and a computer engineering student at Rochester Institute of Technology, I find it disgusting that companies need to outsource American jobs ["Stayed in the U.S.A.," Dec. 15, 2003, page 22, or at www.sdtimes .sdtimes.com/cols/industrywatch _092.htm]. CEOs and executives are focused on making more money for themselves and putting U.S. employees who are dedicated to their jobs and perform just as well as any other outsourced employee out of work.

Outsourcing only benefits the executives at the top and, more specifically, foreign countries. If this is allowed to continue, more and more Americans, especially in research, will be out of jobs. Unemployment is never good for a nation, and U.S. companies must also realize the huge deficit that exists currently will just become higher if outsourcing is allowed to continue, since some $108 billion tax revenue will be lost.

I strongly urge that we as Americans pressure American companies to think twice about outsourcing and consider the real benefits that American employees offer—dedication, experience, understanding of American business process, and understanding of how their company operates. I hope that in the near future our congressmen begin to draft and pass legislation that provides protections to American employees and incentives to U.S. companies that hire American employees over outsourced employees. By doing this, we can ensure our country has a viable economy that spurs job growth along with massive design and innovation of new products that say "Made in the Good Old USA."

Jeff Alstadt

CLARIFICATION

The late February release of FLEXnet Publisher by Macrovision, reported in the March 1 issue, was the "first radical overhaul to our licensing system in 15 years," according to Macrovision marketing vice president Daniel Greenberg. Its most recent updates were in 2002 and 2003.

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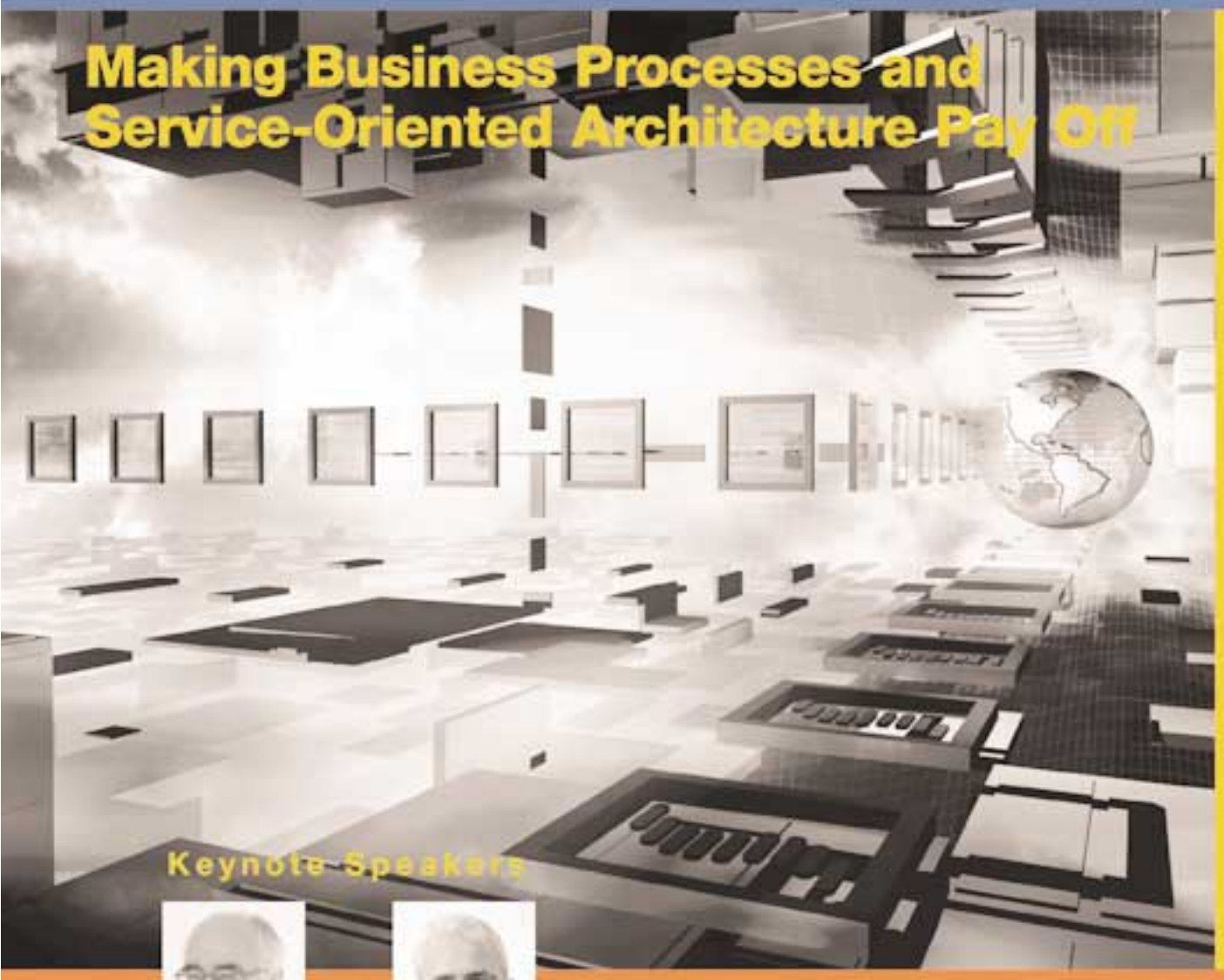

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HELPING JAVA ADVANCE

One of the perils of designing a language to execute in a runtime environment (such as the Java Virtual Machine or the .NET Framework's Common Language Runtime) is that from the get-go, you create legacy executable code. The key word here is executable. Any extensions to the language that might require the addition of new bytecodes threaten to upset all previous executable environments.

As a result, the custodians of Java and other languages that compile to bytecodes are extremely leery of changes to the language structure. And this specific problem is one that, in my opinion, is beginning to become an important issue in the Java environment. (Because Microsoft has sold less enterprise-class software than Java vendors and because the company has been comfortable forcing platform updates on its customers, this aspect will be less problematic down the road for the CLR.)

Traditionally, language vendors have addressed this issue in a way that simply displaces the problem: Rather than fix the language, they add libraries. In certain cases, this is a workable solution, but often it simply means that programmers have to do a lot more typing to handle issues that should really be the province of parsers and compilers. In Java, this is especially apparent in the threads library and in JXTA. Let's look at these.

If one is to believe that threads will be on nearly all desktops soon—and I think this is now a conservative projection—then threads processing should be part of the language, rather than a series of function calls.

The OpenMP standard comes close to providing this solution today in C/C++. OpenMP is a library of threading functions that are called by the *compiler* to thread loops and other program sections.

INTEGRATION WATCH

ANDREW BINSTOCK

In C/C++, this is done through the use of pragmas, which state, for example, "thread the next for-loop using the optimal number of threads." The actual programmer-written code in the loop is unchanged from its single-threaded version. When the program starts up, it checks for the OpenMP library. If it finds OpenMP, it allocates a pool of threads that are subsequently activated wherever these pragma-identified loops occur. The pragma keyword in C/C++ is ignored if the compiler doesn't recognize the command that follows it.

By this mechanism, the OpenMP committee was able to add threading to applications without the developer needing to write a single library call or worry about whether OpenMP is supported on the runtime system. For programmers who revel in the low levels of thread management, OpenMP functions can be called directly, although this practice is (appropriately) discouraged. No function calls, no changes to working code, and transparent runtime support—Java should have these.

Another conservative assumption, in my opinion, is that XML processing will become a primary activity of most software. So will accessing resources across the network, and then combining network access and XML into Web services. If so, then Java syntax would benefit from reflecting these features natively in the language. It seems reasonable to assume that URLs—or, more accurately, URIs—should be a native data type. And why not native XML types—although this would be more difficult.

Work on some of these ideas is under way. For example, the JOMP project is tackling OpenMP for Java. Accessing local or networked devices the same way appeared on my radar screen in the Plan 9 operating system from AT&T Bell Labs (now part of Lucent Technologies). Its approach was to make all resources look like filesystems. And whether the resource is local or remote, it is accessed by the same functions. The compiler and the runtime environment handle any protocol or hand-shaking issues that might arise.

Native support for Web services is being proposed in other languages (which I hope will inspire similar developments in Java). Jeff Schneider of Momentum Software Inc. has been proposing a Service Oriented Language in which many of the resources needed for Web services are built directly into the language. (See schneider.blogspot.com/archives/2004_01_11_schneider_archive.html#107409153082470089.)

Because developers currently can limp along without these features, there is no significant incentive for Sun to make changes that foist binary incompatibility upon users. Binary compatibility is a tremendous incentive to move slowly, with the result that new features always arrive late.

For these reasons, I support IBM's stepped-up request to open the source code to Java. Presuming IBM and Sun can work out a sensible way for this project to function, having the mass of Java developers lobby for and develop new features that make the language more useful and exciting is a big advance. ■

Andrew Binstock is the principal analyst at Pacific Data Works LLC.

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People defining the J2EE platform and related technology. J2EE specification lead Mark Hapner, EJB spec lead Linda DeMichiel, JCP Executive Committee members Richard Monson-Haefel, and Jason Hunter, and many other expert group members.
Major open source project committers/founders. Founder of JBoss and CEO of JBoss Inc Marc Fleury, Hibernate founder Gavin King, Lucene creator Doug Cutting, Tapestry's Howard Lewis Ship, Apache Cactus founder and Maven committer Vincent Massol, OpenSympony Group founder/core-developer Mike Cannon-Brookes, and others.
Authors of important enterprise development books. More than 12 book authors including Core J2EE Patterns author John Crupi, J2EE Design and Development Author Rod Johnson, Enterprise Integration Patterns author Gregor Hohpe, Agile/OO writer Scott Ambler, Ted Neward, and others.
Influencers and other community contributors. TheServerSide.com creator Floyd Marinescu, Enterprise Middleware venture capital partner Peter Fenton, and others.

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Case Study - J2EE Design and Architecture behind Major Automotive Manufacturer's Finance Site

John Crupi - Co-Author, Core J2EE Patterns, Distinguished engineer and Chief Java Architect at Sun.

This case study will describe the refactorings and design behind a very large automotive finance site. The talk will cover the initial design and identified refactoring candidates. It will discuss the various J2EE technologies and the rationale behind their selection and the heavy use of Core J2EE Patterns. Finally, it will describe the process and impact of the design changes and it's impact on overall performance.

Case Study: Production XQuery

Jason Hunter - Servlets, JSP, JAXP and XQJ Expert group member, JCP Executive Committee rep for Apache, Co-author of JDOM, Author, Java Servlet Programming, servlets.com, xquery.com.

As XQuery nears completion, how long before we can use it in production? The answer is, we already can! In this session, we'll look at several working XQuery deployments and dissect how they work. There's no better way to understand a new query language than to see it in action.

Inside Apache Geronimo

Richard Monson-Haefel - Author, Enterprise Java Beans, EJB Expert group member and member of JCP Executive Committee.

Although Apache Geronimo is still a work in progress, much of its core functionality has already been designed and implemented. This presentation explains how the Geronimo application server works on the inside, how it has been implemented and how it functions at runtime.

Opportunities in infrastructure software: venture capital perspective on starting and building tomorrow's BEA

Peter Fenton - Enterprise Infrastructure Venture Capital Firm Partner.

Accel partners has been an active investor in software for the past 20 years, investing in brand-name companies such as Real Networks, Veritas, Macromedia, Remedy, and Motive software. Peter Fenton, a general partner with the firm, will discuss the Accel's perspective on the current environment, areas of opportunity in J2EE, Web services, and XML, strategies for building a startup in a post-bubble economy, and Accel's filter for new investment opportunities.

J2EE Without EJB

Rod Johnson - Servlet 2.4 expert group member, Author, expert one-on-one: J2EE Design and Development, Founder of Spring Framework.

In the last few years, many problems have emerged with the traditional EJB-centric approach to J2EE architecture. In 2003-4 we have seen the emergence of robust alternative infrastructures. This presentation will discuss: Lightweight Inversion of Control containers as an alternative to the EJB component model, the Importance of non-invasive Frameworks, Restoring OOP to its rightful place in J2EE applications, Using AOP to replace declarative EJB services such as transaction management, Transparent persistence with Hibernate and other technologies, Designing applications to allow comprehensive unit testing and Test Driven Development, and Case studies.

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AMATEUR PROGRAMMING ACTION

WINDOWS & .NET WATCH

LARRY O'BRIEN

There are 7 million hobbyist programmers in the United States. So sayeth John Montgomery, program manager of Microsoft's Developer Division. That's a staggering number, absolutely dwarfing the number of shrink-wrap developers (about half a million in the U.S.) and comparable to the total number of professional developers *in the world*. The number doesn't count professionals who tinker with their own blog engine on the weekends, either—the Microsoft study that developed that number wasn't multiple choice. As surprising as that figure may be, what does it have to do with your job and the professionals who read SD Times? A lot.

I'm convinced that the hobbyist sector is a hidden driver of the software development industry—that they account for the next generation of professional programmers and that they represent both a market and a resource for the industry.

First, let's address the most obvious question: If there are 7 million hobbyist coders in the U.S. (and many million more worldwide), why doesn't anyone ever talk about them?

The last unabashedly hobbyist programming magazine was Microcornucopia, which shut down in 1993. I had the bittersweet pleasure of inheriting its editorial backlog at Computer Language, and I've regretted not printing their fantastic series on "How to Build a Robot in a Flowerpot," but by then, and to this day, it had become anathema for a technical magazine to devote editorial space to "amateurs," who, according to the common wisdom, don't buy the things that advertisers are selling.

Putting aside the question of whether there's not *some* editorial appeal in the demographic (surely it'd be a good place to move case mods and ST:TNG box sets), it's probably true that hobbyist programmers are not buying app servers and CASE tools or even multihundred-dollar IDEs.

But I suggest to you that tomorrow's professional programmer is a hobbyist today: perhaps a teen-ager, or a young adult realizing that his or her degree in French literature is opening few doors, or an older person looking for a career change. I don't know how you started in this business, but I'd bet that before you received your first paycheck for coding, you had more than a passing acquaintance with random number generators.

The majority of professional programmers don't have degrees in computer science. (Good statistics aren't available, but in 1993, the National Science Foundation found that only 28.5 percent of college graduates employed in computer occupations had computer science degrees, and while there was a boom in computer science degrees toward the end of the dot-com era, it was still smaller than the boom created by the release of the personal PC in the early to mid-1980s).

When you're filling out your teams, you'll either consider hobbyists or miss out on talent. Not for architects and team leads, presumably, but for junior programmers, who experienced software managers know offer dramatic risk-reward ratios. A jewel of a junior programmer can be an invaluable asset providing a cheap way to explore and prototype alternatives, while two or three clumsy programmers can introduce more chaos than the Marx Brothers.

It makes sense for the software development industry and Microsoft, in particular, to start talking about hobbyist programming.

For one thing, 7 million people constitute a significant market, whether they're buying defect management systems or not—it's more than the 2 million that scuba dive, the 5 million that snowboard, or the 6 million that mountain bike. (It does, however, pale beside the 40 million who bowl. But that's a whole other story.)

For another, it doesn't take a genius to figure out the hobbyists are using free-as-in-beer tools and are being exposed to anti-Microsoft biases. Yes, not all open-source advocates are anti-Microsoft, and the .NET Platform SDK has free-as-in-beer compilers for C#, VB.NET and C++, but neither of those points are as well known as they could be, are they?

Hobbyist programmers deserve their own Web sites, tools, books and magazines. More than that, they deserve the respect and support of those of us who are fortunate enough to make our living programming computers professionally. They remember something that we all too often forget: Programming computers should be a challenge we embrace joyfully, not a chore to do grudgingly. It ain't bowling, maybe, but it ain't a bad way to make a living. ▮

Larry O'Brien is an independent technology consultant and analyst, and the founding editor of Software Development Magazine.

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JAVASERVER FACES IS HERE

It took more than two years, but JavaServer Faces (JSF), aka JSR 127, is finally available. In theory, JSF will help new developers build JavaServer-based Web applications quickly by assembling reusable user interface (UI) components in a page, connecting components to an application data source, and wiring client-generated events to server-side event handlers. Essentially, JSF provides a single application programming interface (API) set for creating interoperable components for application servers and component libraries.

Specifically, that means JSR 127 comes with APIs for UI components and managing their state, handling events and input validation, and easier and more flexible page navigation. It also includes a JavaServer Pages (JSP) custom tag library for expressing a JSF interface inside a JSP page.

Like Swing, JSF provides the usual UI widgets, such as buttons, checkboxes, etc; a model for creating custom widgets; and ways to handle client-generated events on the server. Don't mistake this, though, for just another way to create Web-based user interfaces. It's more than that. JSF's two strongest points are that it enables your developers to create Web applications that aren't specific to a particular rendering kit, and it lets you easily connect a J2EE app server to the user interface.

Without JSF, when you build an interface, if you're using Java Standard Tag Library (JSTL), JSP Expression Language, or even if you just use Struts and assume that HTML is good enough, you still end up with a UI that works well only with a particular browser. That might be good enough in some corporate environments, but wouldn't it be better to have the flexibility to build an application that you could write once and run on any interface from a smartphone to a Pocket PC to a workstation? Hmmm. Write once, run anywhere. Where have I heard that before?

JAVA WATCH

STEVEN J. VAUGHAN-NICHOLS

The ability to easily link a J2EE application and its associated database management system (DBMS) is not a small deal. There have always been many ways for J2EE to work with JSP or other ways to create active Web pages, but that was part of the problem. And, I might add, it was one area where .NET clearly has outshone Java. There was no standard way to present J2EE-based applications to users…until now.

Of course, frameworks like Ants and Struts provided some of this functionality, but JSF provides a greater range of client-side features. You also don't have to give up those frameworks. The open-source Apache Jakarta Struts project already has a JSF library (jakarta.apache.org/struts/proposals/struts-faces.html) to make life easier for programmers who use Struts.

JSF promises to be not just another Java standard. If you're working with Lotus Notes or IBM's WebSphere, I can guarantee you that you'll be working with JSF. Indeed, a beta JSF implementation was already shipping in IBM's WebSphere Studio 5.1.1 a few weeks before the Java Community Process gave JSF its official blessing in early March.

IBM isn't the only company that wants you to use JSF. Sun's newest Java development tool, Java Studio Creator, now in its second beta, includes it. There, JSF is a perfect technology for Studio Creator's avowed goal of simplifying the construction of DBMS-based Web applications.

And simplification is exactly what JSF brings your programmers. We've come a long way from the days of Servlets, Model 1 and Model 2, and JSF is the next evolutionary step.

Of course, you may have already invested a lot of time and effort into creating the perfect blend of JSP Model 2 application. The rise of JSF doesn't mean you have to dump your code in the junk pile. All it means is that you should strongly consider using it for your future projects.

To use JSF, you'll need Java Development Kit (JDK) 1.3.1 or higher and Java Web Services Development Pack 1.3. It will run on Solaris 8 or higher, Windows XP, Windows 2000 or Red Hat Linux.

Since JSF makes J2EE-based Web applications much easier to build, you'll save time on your next project by simply having to spend fewer man-hours on it. In addition, since you can turn over more of the UI work to less-experienced programmers, you'll save even more of your programming budget than a simple look at the development hours would suggest.

Of course, it's still the early days for JSF, but with Apache, IBM and Sun all pushing it, and the simple fact that it really does make a developer's life easier, I'm sure it won't be long before all your favorite IDEs and tools support it. But why wait? You can start working with it today. You'll be glad you did. ▮

Steven J. Vaughan-Nichols is editor of Practical Technology (www.practical-tech.com) and has worked as a programmer for NASA and the Dept. of Defense.

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CHANGE FOR CHANGE'S SAKE

Sometimes, change for the sake of change—or in this case, for the sake of change/configuration management—actually can result in advancement.

First, consider last month's acquisition by Serena Software Inc. of Merant Inc., which has reduced the number of vendors in the space. Before the acquisition, and according to 2002 license and maintenance revenue figures from IDC, Rational was the market leader with US$286 million. Merant was second at $102 million and Serena was third at $89 million. Now, Serena clearly has closed that gap, and stands as an independent vendor not seen as so closely tied to any one development and deployment platform.

INDUSTRY WATCH

DAVID RUBINSTEIN

Some say the acquisition is the result of a maturing market. Others see it as the result of a de-emphasis on version control and a new focus on workflow and process management.

Serena's strength lay in its mainframe solutions, while Merant's was in its distributed solutions. A nice fit, right? It certainly has the potential. However, this integration will be tougher than the one Serena faced when it acquired TeamShare. There are cultural issues involved in merging international offices, and unique problems that arise when a smaller company tries to digest a larger one.

Also, there are many little kingdoms at Merant that might disappear as Serena integrates the product lines. One of them is Collage, a Web content management suite. Serena already attempted an entry into the content management space a few years ago but killed the effort when it failed to gain traction. Will it do the same with Collage?

And what of Merant's PVCS Pro? The low-end CM market, where small group projects are done, is having the life sucked out of it by open source. And late last year, Microsoft launched a US$1,200 product into this space—Systems Management Server 2003. This, along with IBM's building of the Rational CM tools into its development environment, is having the effect of commoditizing the market.

Uttam Narsu, a principal analyst at Forrester Research Inc., said many of today's SCM solutions lack the flexibility enterprise shops need to manage and merge multiple development processes used throughout their organization, although he noted more offerings are building these capabilities in—mostly through acquisition, as Serena did with TeamShare and as IBM added to Rational.

The market, Narsu said, is fairly complex and somewhat unusual in that there is no clear leader. "The closest is [IBM's Rational] ClearCase, which has 30 percent maybe. That's not necessarily an 800-pound gorilla. So perhaps a fresh approach isn't a bad idea."

Enter a small start-up called AccuRev, which markets a CM solution that the company claims is the first clean-sheet approach to the problem in more than two decades, and which Narsu described as "certainly innovative."

Most configuration management systems on the market today, according to AccuRev director of product management Bob Manning, trace their roots to the file-based, SCCS client/server version control system introduced for Unix some 20 years ago. "Products that have retained that core DNA for SCCS can't meet today's development needs," he said.

Today's tools are somewhat dated, Narsu agreed, with "a lot of dependent pieces. Either everything goes in [to a revision] or nothing does."

AccuRev/CM uses a graphical, object-oriented approach to configuration management and issue tracking by considering a version of a project as its own entity, raising the level of abstraction above the file level. AccuRev starts with a Stream Browser, which is similar to branch systems in other SCM systems, Manning explained.

Each stream provides the location of an individual development effort and is created as an object. The top of the stream can be the working codebase, for example, and individual developer workstations can be built off that stream, and the tool automatically populates the workstations with the files of that codebase.

Streams also can be set up for maintenance and updates, and additional workstations can be created, for example, to change the development process, so that all developers working on a particular codebase, say, must put all changes into a review stream before they are fed back into the code. Versions can be frozen to ensure an audit trail for the codebase.

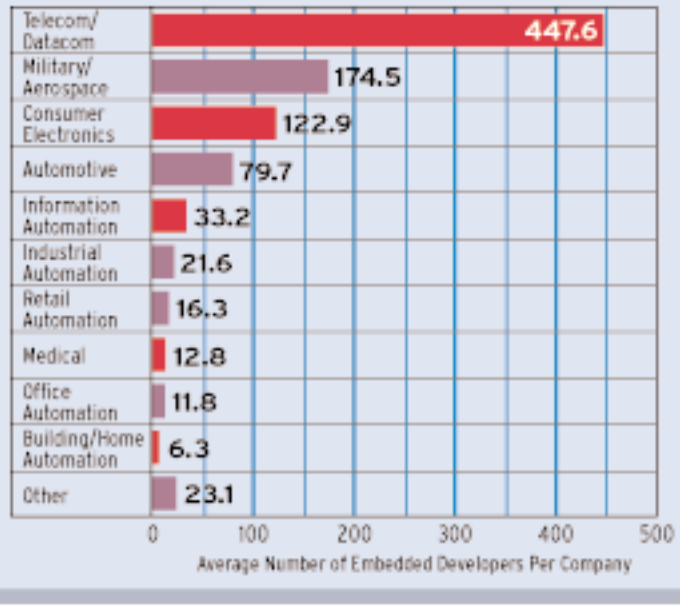
In the AccuRev browser, the amount of time development teams spend in rules meetings, drawing branches and workflows on whiteboards that then have to be recreated in a model is greatly reduced, Manning said. "Our browser is the whiteboard," he said. "When everyone agrees it's right, it's already implemented."

The real question, though, is this: How sophisticated do these types of solutions have to become for development shops to be able to get their work done, or should development managers be looking at ways to improve the processes under which applications are developed in the first place? ▮

David Rubinstein is editor of SD Times.

Which Industries Employ The Most Embedded Developers?

DATA WATCH



Companies building telecom and datacom infrastructure equipment employ far more embedded developers that any other industry, according to a report published in March by research firm Venture Development Corp. The report was based on surveys conducted in 2003; 416 developers responded to the question.

Despite the economic downturn that began in 2001, during which the report said telecom and datacom vendors reduced project starts and headcount and slowed investments in new technologies, the segment remained the strongest in terms of device consumption, and companies seeking to meet this demand employed on average nearly 450 developers. The next nearest with an average of about 175 developers was the military/aerospace field, followed by consumer electronics with slightly more than 120 developers.

Bringing up the rear was the nascent building and home automation market, which employs about six embedded developers per company.

Source: "Embedded Developers' Demands and Requirements for Commercial OSs and Software Development Tools," March 2004, Venture Development Corp.

www.vdc-corp.com

BUSINESS BRIEFS

Computer Associates International Inc. has completed the divestiture of its ownership stake in **ACCPAC International**. It was acquired by **The Sage Group PLC** for US$110 million. CA had owned 90 percent of ACCPAC, which specializes in accounting, CRM, human resources and EDI software. With the sale, CA is adhering to its strategy of exiting the packaged business application market . . . Software testing start-up **Agitar Software Inc.** has closed a US$12.6 million round of funding, led by **New Enterprise Associates**. NEA's Peter Morris joins the Agitar board of directors . . . **IBM Corp.** has agreed to acquire **Trigo Technologies Inc.**, an information management middleware company. Terms were not disclosed. IBM said the purchase accelerates the company's vertical-industry focus by helping companies integrate and manage product information that tends to get dispersed around an organization and its partners, making updates difficult. ▮

CALENDAR OF EVENTS

MySQL Users Conference & Expo — April 14–16
Orlando, Fla.
MYSQL AB
www.mysql.com/events/uc2004/index.html

Visual Studio Connections — April 18–21
Orlando, Fla.
DEVCONNECTIONS INC.
www.vsconnections.com/vs

Linux on Wall Street — April 28
New York
LIGHTHOUSE PARTNERS INC. & FLAGG MANAGEMENT INC.
www.linuxonwallstreet.com

TheServerSide Java Symposium — May 6–8
Las Vegas
THESERVERSIDE.COM
www.theserverside.com/symposium

IDUG 2004 — May 9–13
Orlando, Fla.
INTERNATIONAL DB2 USERS GROUP
conferences.idug.org/namerica/2004

Gartner Application Integration & Web Services Summit — May 17–19
Los Angeles
GARTNER INC.
www4.gartner.com/2_events/conferences/apn12.jsp

Microsoft TechEd — May 23–28
San Diego
MICROSOFT CORP.
www.microsoft.com/seminar/teched2004

BEA eWorld — May 24–27
San Francisco
BEA SYSTEMS INC.
www.bea.com/eworld

For a more complete calendar of U.S. software development events, see www.bzmedia.com/calendar.

Information is subject to change. Send news about upcoming events to events@bzmedia.com.

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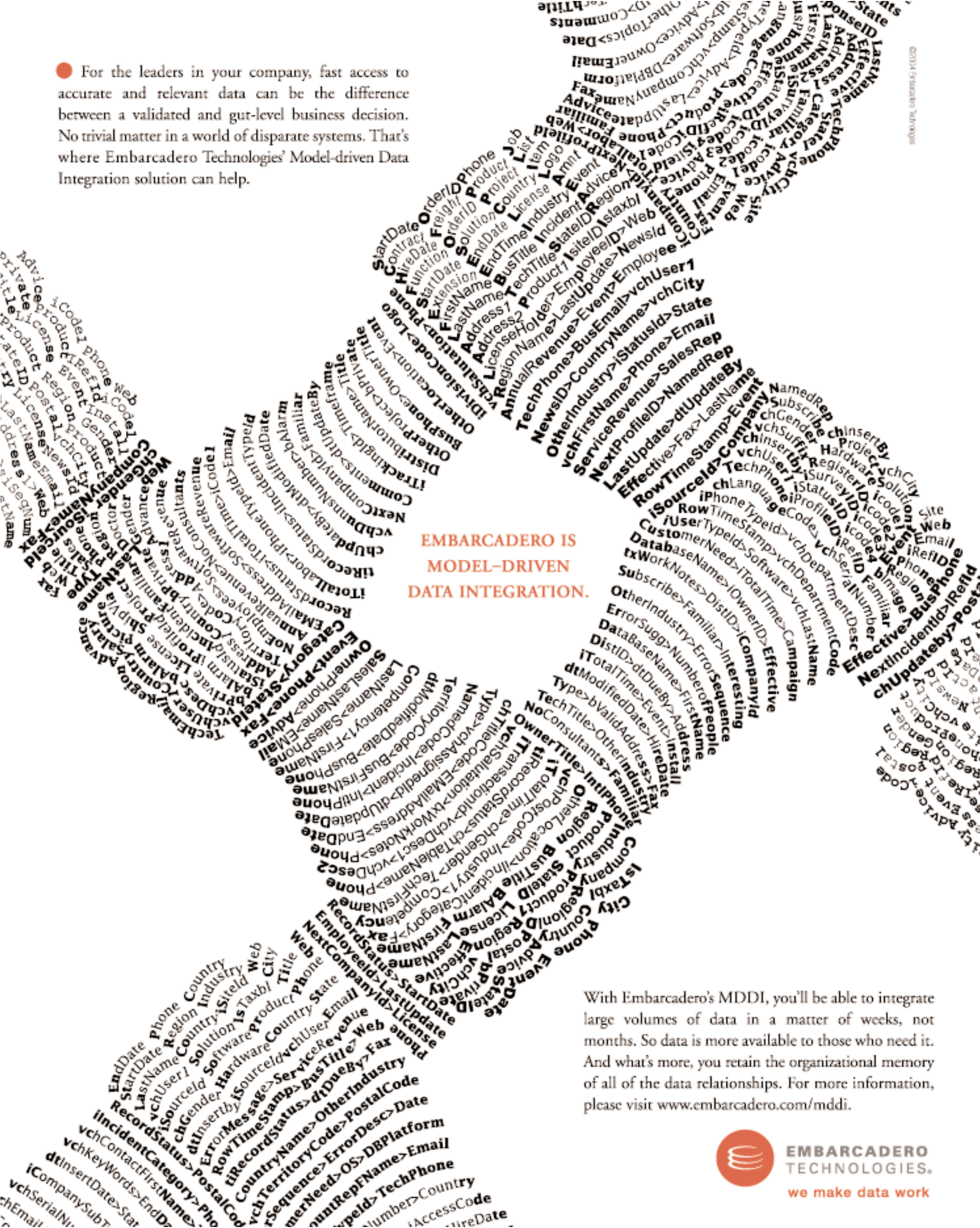

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